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牙周治疗团队工作原则

Decision-Making for the Periodontal Team

Suzanne Noble
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Iain Chapple
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牙周治疗团队工作原则

Decision–Making for the Periodontal Team

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内容提要

“口腔临床要点快速掌握系列”是由国际著名的Quintessence出版集团近期出版的一套介绍口腔各科的基本技术和最新的医学理论的口腔专业丛书。丛书2002年起陆续出版，人民军医出版社率先引进国内，以便国内读者同步了解国际口腔技术发展的新情况。本书由国际知名口腔专家编写，摆脱了一般专著的照本宣科，一切从临床实践出发，通过大量实例，讲解了牙周治疗团队的组成、牙周疾病的预防、牙周疾病的控制、正畸与牙周健康的关系、𬌗与牙周疾病的联系、牙周与修复的关系等内容。本书采用了中英文对照的编排方式，对提高读者的专业英语水平大有裨益，适合临床口腔医师和口腔医学生阅读。

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序

为确保牙科医师给患者提供高质量的医疗服务，一个与之相应的技术团队是必不可少的。近年来牙科全科医师协会已建立了专科医师的名册，注册牙科临床技师的数量也逐年增加。现在，许多口腔全科医师开始为患者选择最适合的专业医师，使医师的专业技能符合患者特定治疗阶段的需要。

为使治疗计划获得成功，患者应被告知治疗团队中每一名成员在他或她的治疗中所扮演的角色。全科医师管理者负责协调整个团队工作，作为团队的领导将对整个团队负全责。他或她如将治疗项目委托给未经注册的医师，则应承担相应的法律责任。每个牙科医师的职责要求其只能允许牙科执业助理医师从事一些他们已经经过培训并且能胜任的治疗项目。所谓能胜任，指不仅具有执行该治疗项目的法定资格，而且应具有无需监督也能达到专业治疗标准的能力。如果团队成员缺乏有规律的临床实践机会，将导致其技能水平下降。因此，全科医师在委派治疗前应留意团队成员是否能胜任，并支持其团队接受职业继续教育。

全面的治疗计划不应仅限于牙周疾病的治疗，还应综合考虑其他疾病，以便使患者获得稳定的、具有一定功能、并符合审美要求的咀嚼器官。本书将指导全科医师为牙周治疗团队作出正确的决策。

本书可独立于其他四本牙周病学系列丛书使用。由于该系列丛书的设计是为了形成某些特定观点及概念，并对其进行强化，因此本书也可作为其他四本书的参考。

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前　言

由国际精萃出版集团出版的口腔执业系列丛书中的第11册，即第2本牙周病学专业著作《牙周治疗团队工作原则》(decision－making for the periodontal team）的出版具有划时代的意义。随着牙科执业助理医师（professional complementary to dentistry）在牙科全科医师协会（general dental council）的注册，牙科治疗团队的时代即将来临。因此有必要回顾和评价团队治疗在临床实践中对患者的作用。

牙科临床技师可从根本上影响患者的口腔健康，进而影响患者对治疗的满意程度，当然也不能忽略治疗队伍中其他成员的作用。作为领导者，您与您的团队成员在制定患者的治疗计划、协同工作并相互交流意见等方面的合作，决定了患者口腔健康从中获益的程度。在一个舒适的、管理有方的环境中共同工作是满足患者需求并不断提升他们期望值的基本条件。如果这些与依据循证医学制定的优秀治疗计划一起很好地实施，可获得最终的成功，患者对此也将充满信心。

您是否对您的患者应采用何种牙周治疗方法充满自信？您何时建议您的牙周病患者到专业牙周医师处就诊？其他治疗方法，如先进的修复、正畸及种植治疗对牙周健康的影响如何？这些方法与牙周治疗的关系如何？最重要的是，您有责任避免以下现象的出现，即牙体及其修复体经过多年后仍然保持良好状态，而牙周组织却出现病变、恶化，最终导致治疗失败。

如果这些问题能引起您的关注及思考，或者您认识到在临床实践中应注意上述问题，那么具有简明实例及指导原则的本书将是您最佳的选择。

主　编

Nairn Wilson

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第 1 章 牙周治疗团队

The Periodontal Team

目　的

本章的主要目的是让牙科全科医师（general dental practitioner, GDP）了解牙科执业助理医师（professionals complementary to dentistry, PCD）的发展及其在牙周病治疗中的所扮演的角色。

Aim

This chapter aims to provide the general dental practitioner (GDP) with an insight into the development and role of professionals complementary to dentistry within the context of the management of periodontal diseases.

要　点

通过阅读本章，开业医师可以了解牙周治疗团队是如何形成的，牙科治疗医师及牙科临床技师各自的法律职责是什么。

Outcome

As a result of reading this chapter the practitioner should have an understanding of how the periodontal team has evolved and the legally permitted duties of dental hygienists and dental therapists.

简　介

首先应明确的是，大量的牙周病患者需要接受诊断及治疗。针对牙周病患者治疗的团队人员组成可能较少，如仅包括牙科医师、牙科临床技师和牙科护士。但是，该团队要在多个临床科室内共同开展工作，每个科室的牙周治疗均由专业的牙科人员进行。这样，牙周专科医师才能对更为复杂的

Introduction

It is in the primary care setting that the vast majority of periodontal disease is diagnosed and managed. The *team* involved in patient care may be small, involving only the dentist, dental hygienist and dental nurse. Conversely, the team may work together in a large polyclinic where periodontal care is one of many specialist dental

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牙周疾病作出诊断及处理。

services offered. In such situations the periodontal specialist will be available for the diagnosis and management of the more complex cases.

广义上说，牙周治疗团队的概念超越了街道上的诊所，其范围涵盖了在医院牙周科作进一步治疗。在此修复科医师及其治疗团队将为相关患者提供建议及治疗。

In its broadest sense, the dental team reaches beyond the high street surgery to include the secondary care services in hospital periodontal departments where the consultant in restorative dentistry and his or her team will offer advice and, where appropriate, treatment of referred cases.

为了使每一个患者都能得到最恰当的治疗，牙科全科医师应推荐患者到团队的其他医师那里，充分利用其他医师的技能、学识及临床经验，以获得理想的治疗效果。该过程并非是一种上下级关系的等级模式，而是以牙科全科医师为中心的圆形模式。牙科全科医师负责接诊患者，并在其他医师治疗后继续对患者进行治疗（图1-1）。牙科全科医师在整个治疗过程中发挥着重要的作用！团队的其他医师将提供重要的技术支持，但是他们的作用有限，仅根据牙科全科医师的要求及治疗计划提供相应的技术支持。

In order to obtain the most appropriate care for an individual patient the GDP will refer the patient to other team members to utilise their skills, knowledge and experience to achieve the desired treatment outcomes. Rather than this referral process being considered as a hierarchical model, it is suggested that it be considered in a circular form with the GDP at the centre. It is the GDP with whom the patient is registered and it is the GDP to whom the patient returns for continuing care (Fig 1-1). The role of the GDP is an *infinite* one! The other team members have important skills to offer, but their roles are *finite* ones, clearly defined by the practitioner's referral request or treatment plan.

在这种分工合作模式下，牙科全科医师在患者疗效的巩固及治疗的告知方面扮演重要的角色，牙科全科医师作为团队领导的作用将在第3章中讨论。为了更好地介绍第3章"协同工

By co-ordinating the referral process the practitioner plays the key role in consolidating the treatment and ensuring that the patient is informed of the reasons behind the referral. The role of the practitioner as

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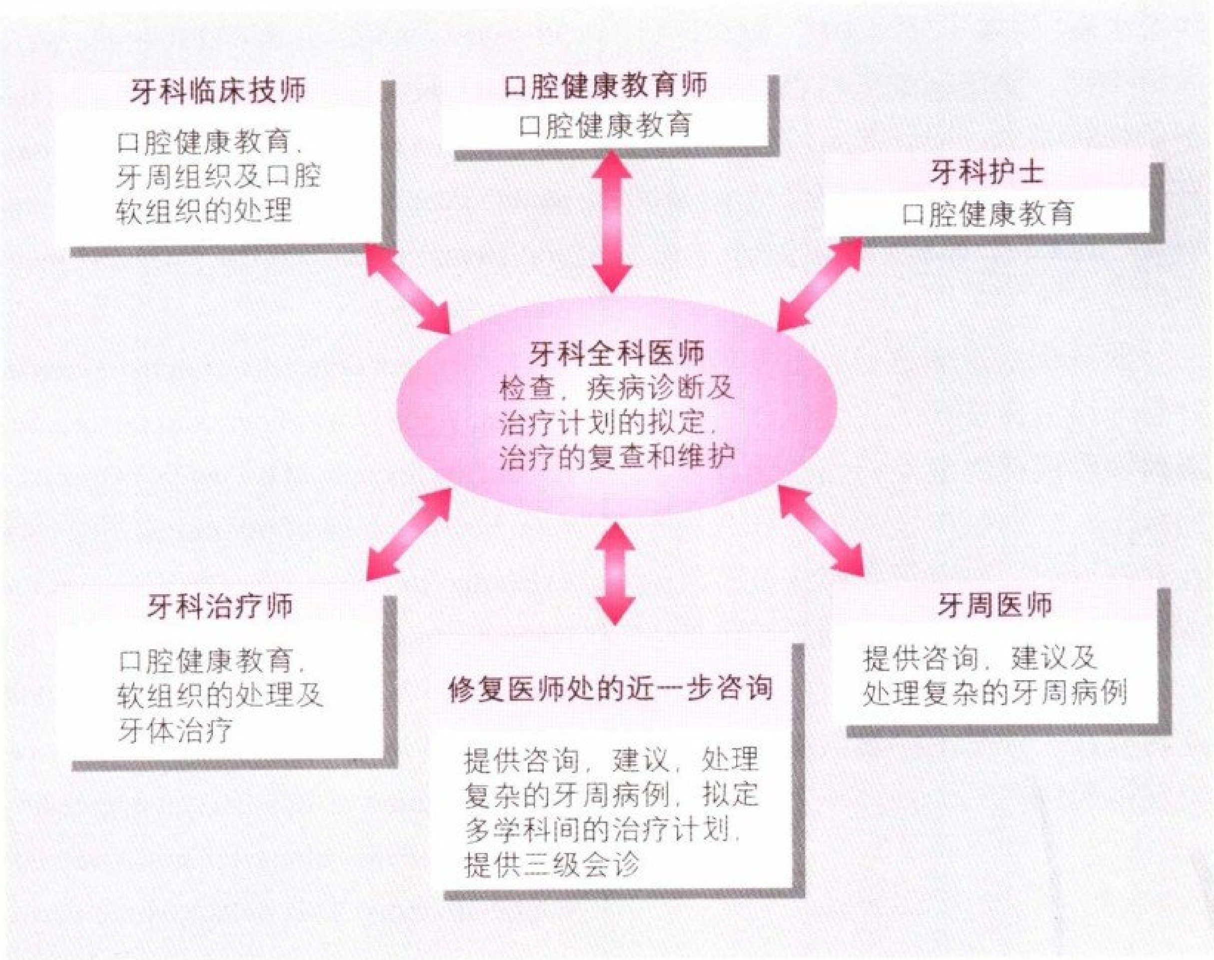


图 1-1　牙周治疗团队的组成

Fig 1-1　Members of the periodontal team

作”，本章将着重介绍牙科执业助理医师的形成过程及牙周治疗团队中各成员所具有的专业技能。

the team leader is explored further in Chapter 3, but by way of introduction to “working together” this chapter will focus on the evolution of the professionals complementary to dentistry and the skills these team members have to offer.

牙科临床技师

1913年美国就开始了牙科临床技师的培训，但英国直到1943年才在皇家空军中开始有正规的牙科临床技师培训。在以后的20～30年里成立了牙

The Dental Hygienist

Although dental hygienists were first trained in the United States in 1913, there was no formal training in the UK until 1943, in the Royal Air Force. During the next 20-

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科卫生系，附属于牙科学校，但与牙科医师相比，受培训的牙科临床技师数量仍相对较少。1957年牙科临床技师开始被要求在牙科医师协会（general dental council，GDC）登记注册。

对牙周病患者进行宣教及预防仍然是牙科临床技师的主要工作，但随着对口腔疾病患者实行团队治疗概念的提出，牙科临床技师的工作内容也在逐渐增加。具有牙科临床技师及治疗医师双重资格者与牙科学校的学生一样接受牙科教育以获得学位及文凭。这将有助于牙周治疗团队概念在临床实践中形成。

口腔疾病模式的变化以及公众对口腔健康的关注和要求的日益增加促成了1993《纳菲尔德地区牙科辅助人员受教育及培训情况调查报告》的产生。这种日益增长的需求对牙科辅助人员提出了更高的要求，同时也使牙科治疗团队在形成过程中产生的许多关键问题的讨论变得更加激烈。为此牙科医师协会成立了牙科辅助人员评议组，以对各种类型的牙科辅助人员制定合适的推荐标准。该委员会于1998年制定了牙科辅助人员的从业标准、注册要求及职责，并建议对正在接受教育的牙科医师及牙科辅助人员中推广团队协作的概念，使两者的关系

30 years schools of dental hygiene were founded and attached to dental schools, but they trained relatively few hygienists compared to dentists. Enrolment with the General Dental Council (GDC) became mandatory in 1957.

The original concepts of *patient education* and *prevention* of periodontal diseases remain the linchpin of the dental hygienist's role, but the range of permitted duties has expanded in recent years in line with the current concepts of team management for patients with oral diseases. Dually qualified dental hygienists/therapists now receive education to diploma and degree levels in universities alongside undergraduate dental students. This enhances the periodontal team concept within the workplace.

The changing patterns of oral disease and the increasing public awareness and demand for oral health was the driver behind the *Nuffield Inquiry into Education and Training of Personnel Auxiliary to Dentistry* in 1993. This extensive inquiry examined the role of dental auxiliary personnel, and stimulated widespread debate on a number of key issues surrounding the development of the dental team. Following this the GDC set up the Dental Auxiliaries Review Group (DARG), to prepare appropriate recommendations in relation to all classes of dental auxiliary. The committee reported in 1998, setting out

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更为密切。

proposals on permitted duties, entry requirements and registration. It was also recommended that the team concept for future practice should be promoted through the training of dentists and dental auxiliaries in close association with each other.

1999牙科医师协会宣布了牙科执业助理医师时代的到来。牙科医师协会支持对所有牙科从业人员进行依法注册，并提高经正规教育及培训的人员在临床工作中的作用。虽然牙科临床技师由于公众对其作用熟悉，仍采用原有的称谓，但牙科临床技师已经成为另一个较大的群体——牙科执业助理医师中的一员。牙科医师协会强调协会成员必须是经过正规教育培训，并且牙科执业助理医师应在注册医师的指导下进行临床工作。

Subsequently, in 1999, the GDC announced a new era for professionals complementary to dentistry. The council supported statutory registration of all members of the dental team and the widening of clinical roles after appropriate education and training. Although the term *dental hygienist* remained protected, as it was a role with which the general public was familiar, the dental hygienist became incorporated into a wider group subsequently named Professionals Complementary to Dentistry (PCD). The GDC emphasised that entry to the register would be on the basis of appropriate education and that each PCD should practise only under the delegated authority of a registered dentist.

牙科全科医师协会作出上述规定的意图是让所有牙科执业助理医师在牙科治疗团队中工作，在团队内牙科医师仍将对疾病的诊断、治疗计划的制定及治疗效果负责（图 1-2）。

It was the expressed intention of the GDC that all PCDs should continue to work within the dental team within which the dentist would remain responsible for diagnosis, treatment planning and the quality control of the treatment provided (Fig 1-2).

法律责任

Legally Permitted Duties

当牙科全科医师协会允许所有的

Until such time as the GDC is able to

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图 1-2 牙科团队及其领导
Fig 1-2 The team and team leader

牙科执业助理医师注册后，牙科临床技师及牙科治疗医师可从事1984年制定的《牙科医师工作守则》及1986年《牙科医师辅助人员条例》中所规定的临床操作内容。上述法规于1991年及2002年进行两次修订。超出上述两条例规定的临床操作均是违法的。

允许在"注册牙科医师的指导下"进行工作，意味着牙科医师事先需对患者进行检查，并对患者所需治疗内容以书面形式作出简要的说明。当临床技师或治疗医师进行治疗操作时并不需要牙科医师在场。这项立法是1991年修订案的一部分，这也使得牙科临床技师可以上门对患者进行服务。

register all PCDs, dental hygienists and dental therapists may practise dentistry to the extent of the Dentists Act 1984 and the 1986 Dental Auxiliaries Regulations, with amendments in 1991 and 2002. It is an offence to practise outside these limits.

They are permitted to work "under the direction of a registered dentist". This implies that the dentist has examined the patient and indicated in writing the course of treatment to be provided. The dentist need not necessarily be present on the premises at the time the hygienist or therapist is carrying out the treatment. This legislation formed part of the 1991 amendment to permit hygienists to carry out domiciliary visits.

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临床表现的不同，牙科医师的督导作用也有所不同，因此牙科医师有责任注意临床表现的变化。当临床技师或治疗医师对患者进行清醒麻醉时，牙科医师必须在场，并陪同患者完成整个治疗过程。当进行神经阻滞麻醉时，牙科医师需待在诊所内，但不必在场。2002年后，随着执业内容的增加，许多开业医师须在其诊所内对临床技师和治疗医师进行再培训，以获得其他技能。建议对这些培训应进行密切的监督。

The supervisory role of the dentist varies in differing clinical situations and it is the dentist's responsibility to be aware of these parameters. In the case of treatment of a patient under conscious sedation by a hygienist or therapist, the dentist must be in the surgery with the patient throughout treatment. Whilst inferior dental nerve blocks are being administered the dentist must be on the premises but not necessarily in the room. With the introduction of expanded duties from 2002, many practitioners will be involved in workplace post-qualification training for additional skills for hygienists and therapists, and the recommendations are for close personal supervision of a designated number of procedures.

牙科临床技师被允许进行的牙科临床操作内容包括：

- 清洁及抛光牙面。
- 洁治牙面（即使用恰当的医疗器械去除牙面及近游离龈缘下的沉积物）。
- 根据牙科医师协会的规定对牙齿进行处理如预防性材料的使用。
- 根据《牙科工作守则》（1984）37章第 1 款内容对患者提供建议，

Dental hygienists are permitted to carry out the following kinds of dental work:

- Cleaning and polishing teeth.
- Scaling teeth (i.e. the removal of deposits, accretions and stains from those parts of the surfaces of the teeth which are exposed or which are directly beneath the free margins of the gums, including the application of appropriate medicaments).
- The application to the teeth of such prophylactic materials as the GDC may from time to time determine.
- Giving advice within the meaning of section 37(1) of the Dentists Act 1984

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是正确执行上述牙科工作所必须的。

- 拍摄牙科X线片。
- 龈下刮治及根面平整术前的局部浸润麻醉及神经阻滞麻醉。
- 为临床诊断制取研究模型。
- 在急诊时使用塞治剂，临时冠的替换。
- 对接受治疗的患者进行清醒麻醉。

在获得资格认证后，牙科临床技师还应通过其他课程学习及通过临床实践具备其他的技能。在临床实践中牙科临床技师的技能包括：

- 去除龈上及龈下牙石。
- 精细的根面刮治（root surface debridement，RSD）。
- 口腔卫生宣教。
- 牙周辅助治疗，如局部缓释抗菌制剂的使用（根据1968年《药物使用规则》规定，药物须由临床医师开具处方）。
- 使用恰当的药物治疗牙本质过敏。
- 局部使用氟化物进行龋病的预

such as may be necessary for the proper performance of the dental work prescribed.

- The taking of dental radiographs.
- The administration of local infiltration and inferior dental nerve block analgesia for the purpose of scaling or root debridement.
- The taking of impressions for diagnostic purposes.
- The emergency placement of temporary dressings and replacement of crowns with temporary cement.
- The treatment of patients under conscious sedation.

Depending upon the date of primary qualification, there may be additional skills obtained and certified by course attendance and workplace supervision. In clinical practice the dental hygienist's skills include:

- The removal of supra- and subgingival calculus.
- Closed root surface debridement (RSD).
- Appropriate oral hygiene advice.
- The application of local delivery antimicrobial agents as an adjunct in periodontal therapy (under the Medicines Act 1968 the dentist must prescribe the drug to be used).
- Management of dentinal hypersensitivity with appropriate medicaments.
- Prevention of dental caries by the ap-

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防。
• 窝沟封闭（不允许对小的龋洞进行树脂充填治疗）。

• 对充填体进行抛光。

牙科治疗医师应对牙科临床技师的下述临床操作负责：

• 乳牙的拔除。
• 简单充填。
• 乳牙的牙髓治疗。
• 乳牙预制冠的放置。

plication of topical fluoride.
• Fissure sealing (the use of filled resins in minimally prepared cavities is not permitted).
• Polishing dental restorations.

Dental therapists may carry out all the duties listed for dental hygienists with the addition of:

• Extraction of deciduous teeth.
• Simple fillings.
• Pulp therapy to deciduous teeth.
• The placement of prefabricated crowns on deciduous teeth.

1986 年《牙医师辅助人员条例》中规定牙科临床技师及牙科治疗医师的执业内容

局部麻醉

局部浸润麻醉

1992年以后获得牙科临床技师证书（diploma in dental hygiene）的牙科临床技师或者获得牙科治疗证书（diploma in dental therapy）（以前称为熟练证书(Certificate of Proficiency)）的牙科治疗医师可以在局麻下进行刮治。上述技能在1992年以后成为牙科临床技师培训课程的核心内容，因此，1992年以后获得资格的牙科临床技师不必再经过该方面的资格认证。

1992年以前获得资格的牙科临床技师则必须出具接受过局部浸润麻醉培训的资格证明。2002年7月1日通过

Permitted Duties of Dental Hygienists and Dental Therapists since the 1986 Dental Auxiliaries Regulations

Local anaesthesia

Local infiltration analgesia

Dental hygienists who hold the Diploma in Dental Hygiene awarded after 1992, or dental therapists who hold the Diploma in Dental Therapy (formerly the Certificate of Proficiency) may carry out scaling under local infiltration analgesia. This competency was included in the hygienists' core curriculum from 1992 onwards. Therefore hygienists qualifying after that date will not hold separate certification.

Dental hygienists who qualified before 1992 must to be able to demonstrate competency by presentation of a certificate

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法律规定，牙科临床技师在进行局部浸润麻醉时不再需要牙科医师的监督，但需要一名经过心肺复苏技能培训的医师在场。

proving post-qualification training in local infiltration analgesia. Following legislation passed on 1 July 2002, the dentist does not have to be on the premises whilst the dental hygienist is administering local infiltration analgesia. *Under these circumstances a third person with current training in cardiopulmonary resuscitation must be on the premises.*

神经阻滞麻醉

2002年7月对条例进行补充后，牙科临床技师及牙科治疗医师被允许独立进行神经阻滞麻醉。条例建议，在获得资格前，上述人员在培训期间应在严格监督下完成10例临床操作。在培训期间，当牙科临床技师或牙科治疗医师进行神经阻滞麻醉时必须要有注册牙科医师在场。

Inferior nerve block regional analgesia

Following the July 2002 amendments to the regulations, dental hygienists and therapists are permitted to carry out their statutory duties under the administration of an inferior dental block that they have personally administered. The recommendations are that the training period must include 10 closely supervised procedures in the workplace before certification by the awarding authority is issued. *Following this, a registered dentist must be on the premises whenever an inferior dental block is administered by a dental hygienist or therapist.*

牙科X线片的拍摄

牙科临床技师及牙科治疗医师在接受《离子辐射医疗照射规程》的培训后可进行临床X线片的拍摄。

Dental radiography

Dental hygienists and dental therapists may take dental radiographs provided they have received training according to the Ionising Radiation Medical Exposure Regulations IR(ME)R 2000.

1992年7月起牙科X线片的拍摄也成为牙科临床技师的核心课程。

Since July 1992 dental radiography has been included in the core curriculum for

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1992 年以前获得资格的牙科临床技师必须经过再培训并进行资格认证。这些培训课程与牙科护士的培训课程类似。

dental hygienists. Those persons who qualified prior to this date must undergo the recognised training and have evidence of certification to be legally permitted to take radiographs. The courses of training are similar to those undertaken by dental nurses.

急诊时使用塞治剂与暂时冠的替换

根据1999年及2002年的规定，牙科临床技师及牙科治疗医师在经过恰当的培训后对患者进行治疗时可对脱落的充填体使用临时充填材料进行充填，或替换脱落的暂时冠。条例强调患者及牙科医师必须被告知上述操作，并应建议患者及早接受牙科医师的治疗。

The emergency placement of temporary dressings and replacement of crowns with temporary cement

Providing the dental hygienist or dental therapist has undergone appropriate training (according to the regulations of 1999 and 2002) they may place a temporary filling material or replace a crown with temporary cement provided that the filling or crown was dislodged whilst they were treating the patient. The regulations state that both the patient and the dentist must be informed of the event and the patient must be advised to see the dentist as soon as possible.

印模制取

根据2002年条例的规定，牙科临床技师及牙科治疗医师在经过恰当培训后可取患者牙殆模型进行临床研究。条例同时建议，牙科临床技师或治疗医师在获得资格前，应在培训过程中在牙科医师或经培训已获得资格认证的牙科临床技师及治疗医师的监督下取五副牙殆模型。

Impression taking

Similar to the above, according to the 2002 regulations, providing that the dental hygienist or dental therapist has undergone appropriate training they may take impressions for study models. The recommendations are that following theoretical training five sets of impressions must be undertaken with the supervision of the dentist, or an

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appropriately trained and certified dental hygienist or therapist, in the workplace before certification will be issued by the awarding authority.

对患者进行清醒麻醉

牙科临床技师及治疗医师在经过恰当的相关课程培训后，可对患者进行清醒麻醉。该操作通常在牙科医师进行牙科手术治疗时进行。

Treatment of patients under conscious sedation

Dental hygienists and therapists may treat patients according to their remit under conscious sedation provided they have undergone appropriate training in a recognised educational establishment, and *always* with the dentist in the surgery at the time the procedure is being carried out.

牙科部门

牙科临床技师通常能在所有牙科治疗相关部门工作，但是牙科治疗医师则被限制在公共健康服务处及私人牙科诊所内工作。2002 年 7 月条例经过修订后允许牙科治疗医师在所有的与牙科治疗相关的部门工作。

正如前面所言，牙科临床技师及治疗医师从事超出 1984 年制定的《牙科医师工作守则》、1986 年《牙科医师辅助人员条例》及其他相关补充条例规定的临床操作均属违法。因此，在制定治疗计划时，牙科医师将上述规定以外的临床操作交给牙科临床技师及治疗医师是违法的，也是对患者不负责任。他们均面临被起诉的危险。

Sectors of Dentistry

Dental hygienists have always been able to work in all sectors of dentistry, but dental therapists were restricted to practise in the Public Health Services and the Personal Dental Service pilot schemes. Since the revised regulations of July 2002 dental therapists may work in all sectors of dentistry.

As stated previously, it is illegal for dental hygienists and therapists to practise dentistry other than is permitted by the Dentists Act 1984 and the 1986 Dental Auxiliary regulations and amendments. In this regard, it is unlawful for the dentist to prescribe treatment which does not fall within the permitted duties, neither is it appropriate that these persons are directed to work

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in an unreasonable manner. Both parties may be liable to a charge of misconduct if this situation arises.

牙科医师要求牙科临床技师及治疗医师进行的临床操作必须明确，不能含糊不清。临床操作处方必须有医师的签名及签名日期，并放在病历中。患者每隔12个月都必须接受牙科医师的复查，虽然这期间可以接受其他治疗。

The prescription from the dentist to the hygienist or therapist must be understood by all concerned, without risk of ambiguity. It is a medicolegal requirement that prescriptions are signed and dated by the prescriber and retained with the case notes. The patient must be examined by a dentist every 12 months although interim treatments between these examinations are permissible.

道德规范／维持标准

Ethical Guidance/Maintaining Standards

根据公众、患者及职业本身的要求，牙科医师协会规定了牙科临床技师及治疗医师的道德规范，即维持标准。违反这些道德规范者将受到指控（如下述违反职业道德行为：对患者不诚实、猥亵、采用暴力、滥用酒精及药品（图1-3）；对患者给予不真实、错误或不道德的引导，尤其是面对媒体时；滥用患者与临床医师间的关系，尤其是患者对医师的信任感）。

In terms of what the public, patients and the professions expect, the GDC directs hygienists and therapists towards their ethical guidance – maintenance of standards. Failure to follow this guidance may lead to a charge of misconduct (i.e. any behaviour which adversely reflects on the professions, such as dishonesty, indecency, violence, alcohol or drug abuse (Fig 1-3); giving untrue, misleading or unethical statements, particularly when interacting with the media; and abuse of the relationship between the patient and clinician, particularly with regard to trust and maintaining confidentiality).

牙科临床技师及治疗医师在进行任何治疗时都应征得患者的同意，随

Dental hygienists and dental therapists must obtain informed consent for any treat-

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图 1-3 不正确的行为
Fig 1-3 Adverse behaviour

时了解患者的治疗情况，并及时告诉牙科医师患者病情的变化。他们应对患者给予较多的关注，从患者的利益出发，详细地记录所有的治疗情况。

牙科医师、牙科临床技师及治疗医师都有责任保证治疗进行时（包括家访）有第三方在场。

牙科临床技师及治疗医师必须充分地了解控制感染的实际方法。任何违反操作要求的行为将使操作者及经营者受到指控。

牙科临床技师及治疗医师应随时

ment they undertake, update the patient's medical history and inform the dentist of any changes. They must provide a high standard of care by always acting in the best interests of the patient and keep full and up-to-date records of all treatment.

It is the responsibility of the prescribing dentist as well as the hygienist or therapist to ensure that a third party is present on the premises whenever treatment is undertaken – this includes domiciliary visits.

The dental hygienist and therapist must be fully aware of the practice protocols on infection control. Any breach of national guidelines is likely to lead to a charge of misconduct both for the operator and the practice owner.

It is imperative that dental hygienists and

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准备对临床出现的紧急情况进行处理。他们还应不断地接受再教育并获得资格认证。牙科医师应为诊所配备抢救设备，并通过紧急情况模拟训练以确保每个医师都能操作这些抢救设备。

dental therapists are fully prepared to deal with a medical emergency. It is their responsibility to ensure training is regularly updated and certified. It is the dentist's responsibility to provide the mandatory resuscitation equipment and to ensure all the team members practise resuscitation routines in a simulated emergency situation.

将来，法律赋予的职责将以条文的形式写入教科书，牙科执业医师的道德规范及其职责也将作为其能力的考核内容。当然，这仅仅是一个框架，还需不断地调整。牙科医师在对患者整个治疗过程负责的同时，可将部分治疗内容交由牙科执业助理医师来处理。牙科执业助理医师应具有相应的能力完成这些治疗。

In the future, the statutory list of permitted duties is likely to be replaced by regulation through curricula, ethical guidance and professional responsibility to practise dentistry within the limits of competence. This concept develops a framework of responsibility with flexibility. The dentist has overall responsibility for the patient's oral care plan, while delegating aspects of treatment to a suitability trained and qualified PCD. The PCD would be professionally accountable for these specific, delegated requirements.

临床相关要点

- 患者期望得到高标准的治疗。
- 治疗应由具有相应能力的治疗团队来完成。
- 治疗团队应由牙科医师来领导及协调。
- 所有团队成员应自我监督并不断地学习和提高自身技能。

Key Points of Clinical Relevance

- Patients expect high standards of treatment.
- The treatment should be delivered by an appropriately skilled dental team.
- The team must be led and co-ordinated by the dentist.
- All members have an obligation to be committed to self-audit and continuing professional and personal development.

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- 牙科医师应保证治疗按计划进行。

- The dental surgeon must designate the work to be undertaken by means of a written prescription.

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拓展阅读
Further Reading

1 General Dental Council. Ethical Guidance for Dental Hygienists and Dental Therapists. London: General Dental Council, 2000.

2 General Dental Council. Professionals Complementary to Dentistry. A Consultation Paper. London: General Dental Council, 1998.

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第 2 章 牙科执业助理医师聘用相关医学法规

Medicolegal Aspects of Employing Professionals Complementary to Dentistry

目　的

本章的目的是指导开业医师如何通过聘用牙科执业助理医师以保持治疗队伍的连续性及高效性。

Aim

The aim of this chapter is to guide the practitioner through the recruitment and retention of staff who will form a coherent and effective dental team.

要　点

通过对本章的阅读，开业医师应意识到在聘用牙科执业助理医师方面应承担一定的责任。

Outcome

As a result of reading this chapter the practitioner should have an awareness of the responsibilities involved in the employment of PCDs.

牙科医师协会的作用

本书中多处提到牙科医师协会，因此本章一开始将主要介绍牙科医师协会的作用：

- 为英国牙科专业人员制定法规以维护公众的利益。

The Role of the General Dental Council

Several references to the General Dental Council are made throughout the book and it is therefore pertinent to begin this chapter with a brief overview of the role of the GDC:

- Protecting the public by the regulation of dental professionals in the United Kingdom.

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- 负责牙科医师及牙科执业助理医师的注册工作。
- 保持对医师个人及专业高水平的管理。
- 保证高水平的牙科教育。
- 保证牙科医师接受继续教育。
- 为牙科医师执业创造良好的环境。

- Registering dentists and PCDs.
- Maintaining high standards of personal and professional conduct.
- Ensuring high standards in dental education.
- Requiring dentists to take part in continuing professional development.
- Taking action in the case of concern over a dental professional's fitness to practise.

经营者的作用

在实践中经营者应遵守与人员雇佣相关的法律。全面介绍与人员雇佣有关的法律知识并非本书的主要内容，但本书将突出介绍与牙科执业助理医师的雇佣及管理有关的内容。

The Role of the Employer

The practice principal is the employer of staff and consequently has to comply with employment legislation. It is not the role of this book to consider all aspects of employment but to highlight relevant aspects of the employment and management of PCDs in the primary care setting.

人员的聘用

牙科医师可依据法律规定将几乎所有的牙周病非手术治疗的内容交给牙科临床技师或具有相应资格的牙科治疗医师进行，并为新的受聘人员配备相应的治疗设备，同时要为他们提供牙科护士的协助（见第 4 章）。

由于具有相应资格的牙科临床技师及治疗医师的数量较少，因此，在人员的聘用方面显得较为困难。与在读

Recruitment

The dentist may legally designate almost all non-surgical management of periodontal disease to a dental hygienist or dually qualified dental therapist. The new employee will of course require the provision of a suitably equipped surgery and access to the support of a dental nurse (Chapter 4).

Recruitment is currently difficult due to the limited resource of qualified dental hygienists and therapists. These personnel are

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的牙科医师数量相比，受培训的牙科临床技师及治疗医师的数量相对较少，而且其中绝大部分是女性。由于家庭及经济的因素，她们的就业在一定程度上受地理位置的制约。Hillam (2000)等对利物浦牙科卫生学校（Liverpool school of dental hygiene）的毕业生进行长达 21 年的跟踪研究发现，仅有 6%的受调查者认为工作难找，83%对工作满意。临床实践工作及其他数据也显示，她们同女性牙科医师一样愿意继续从事她们所选择的职业。

考虑上述因素，开业医师应决定是否在当地或全国范围内进行招聘。招聘广告可在英国牙科临床技师协会(British dental hygienists association, BDHA）及英国牙科治疗医师协会(British association of dental therapists, BADT)出版的刊物上刊登（图2-1）。另外，通过与牙科院校联系或通过朋友、

trained in relatively small numbers compared to undergraduate dentists and the vast majority are women who, owing to domestic and economic factors, may not be versatile in their geographic location when seeking employment. In a study by Hillam (2000), spanning a 21-year period, of graduates from Liverpool School of Dental Hygiene, only 6% recorded any difficulty fmdingjobs and 83% reported job satisfaction. The majority work in general dental practice and data suggest they are likely to continue to work in their chosen career, at least as long as female dentists do in theirs.

Bearing these factors in mind, the practitioner must decide whether to advertise locally or nationally. The British Dental Hygienists Association (BDHA) and the British Association of Dental Therapists, (BADT) publish journals in which advertisements may be placed (Fig 2-1). Contacting training schools or word of mouth



图 2-1　英国牙科临床技师协会及英国牙科治疗协会出版的刊物

Fig 2-1 Journals of the British Dental Hygienists Association and the British Association of Dental Therapists

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同事介绍也是一个可行的方法。通过后者进行招聘时应注意公平原则。

广告中的叙述越详细，应聘者所了解的信息就越多，经营者就不需要花大量的时间对不符合要求的人员进行面试。多数牙科临床技师可在一家或多家诊所兼职，工作时间也无需固定。弹性的工作时间及方式将增加其就业机会。

工作经历及个人特点的描述

对以往工作经历及个人特点的描述可达到两个重要的目的。应聘者对自己以往工作的详细描述将影响到自己能否被聘用。对个人特点的描述可使经营者了解应聘者的工作能力、工作经验及个人素养是否符合工作要求。同时对工作经历及个人特点的描述也可决定应聘者是否能参加面试。

经营者一般要求应聘者提供完整的格式化申请书或要求应聘者提交证明其资质能力的相关课程学习的证明。申请书的内容包括工作经历，尤其是

via friends and colleagues may also be productive. Care must be taken, in the latter situation, not to breach the equal opportunities legislation.

The more information given in the advertisement, the better informed the potential applicant will be, and consequently the employer will not waste time interviewing staff who do not fulfil the required criteria. The majority of dental hygienists work part-time in one or more practices and may not be able to accommodate specific day requirements. Flexibility of days and hours will broaden the potential recruitment base.

Write a job description and a person specification

A written job description and person specification will fulfil two important purposes. The potential applicant will be informed of the details of the post and this will form the basis of the contract of employment later. The person specification allows the employer to reference criteria required against qualifications, experience and personal qualities offered by the applicant. It also provides the evidence for shortlisting for interview.

The practice may prefer the completion of a customised application form or request the applicant to submit a current curriculum vitae from which to cross check their

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其他被聘用的记录，及接受继续再教育的记录，这些内容将在面试时被进一步了解。有准备应聘者应准备好最近所参加的课程学习证书。应聘者还应指明两位相关的介绍人，其中一个可以是现任雇主，如果是刚毕业的学生，介绍人可以是众人认可的学校职员。

qualifications. Issues, which may be explored at interview, are the work experience, in particular any gaps in the employment records, and the applicant's continued professional development record. An applicant who is well prepared would present a portfolio of verification of courses recently attended. The applicant should also indicate two persons who may be contacted for references, one of whom should be the current employer, or in the case of new graduates, an authorised school official.

面试的安排

应安排具体的时间对应聘者进行面试，以便充分讨论及进一步提出问题。在某个工作日对工作场所进行参观，对应聘者而言是非常有帮助的，但如果在手术过程中安排面试则是不恰当的。面试常被单独安排在一间房间中进行，面试成员由专门的人员组成。每一名面试成员都应事先决定他们所要提出的问题，面试主管将对整个面试过程进行协调。无需对每个应聘者提问相同的问题，但提问相类似的问题将使应聘者间的竞争显得较为公平，同时也便于对每个应聘者进行打分。问题不能因为受试人群的不同而出现差异，如性别、文化、宗教信仰或年龄。面试不应在下述情况下进行：

Arranging the interview

It is courteous to set time aside to interview applicants to allow a full discussion and questions. Whilst a tour of the practice during the working day is very helpful to the applicant, it is not appropriate to conduct the interview during a surgery session. A room should be designated and an interview panel selected. Each member should have decided, in advance, the issues they wish to explore and a chairperson should be appointed to co-ordinate the interview. It is not necessary to ask the applicants the same questions, but it helps if the questions are similar, because this enables objective comparisons to be made and the responses formulated into a numerical score. The questions should not be discriminatory on any grounds, e.g. sex, culture, religion or age. The interview should not be conducted

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- 手术进行时。
- 诊所的接待处，因为患者可听到面试的内容。
- 面试安排太过随意（图 2-2）。

下列内容在面试过程中应被提及并讨论：

- 工作条件及期限。
- 工作所需设备的提供。
- 牙科护士的配备。
- 工作时间安排。
- 临床操作要求。
- 培训及自身发展。
- 如何计算薪酬。

同应聘者一样，经营者也需要一段时间考虑，因此有必要告诉应聘者何时作出雇佣决定，并通过何种形式

in:

- the surgery whilst working
- the reception area where the patients may overhear
- a setting that is too informal (Fig 2-2).

The following should all be clarified during the interview:

- Terms and conditions of service.
- Equipment provision.
- Nursing support.
- Appointment scheduling.
- Practice protocols.
- Training and development.
- Method of remuneration.

The applicant as well as the employer needs time to reflect, therefore it is normal to inform the applicant when a decision will



"那么，业余时间你喜欢干些什么呢？"

图 2-2 不理想的面试环境

Fig 2-2 Not the ideal environment for an interview

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通知其本人。记住，应该诚实。告诉应聘者还有其他应聘者将参加面试，这并不会对应聘者造成伤害。相关的解释可以是多种多样的，但如果不进行必要的解释，经营者将没有权利进一步了解聘用者的个人信息。

be made and by what method they will be informed. Be honest. If there are others to interview there is no harm in telling the applicant. The interpretation of references by potential future employers may vary, but if they are not pursued, then the option of obtaining information about the applicant before making a decision is closed.

提出雇佣

与工作有关的相应条款及开始工作的日期都应以书面的形式确定下来。经营者应要求雇员对这些内容以书面的形式确认同意。同时还应有礼貌地通知未被雇佣者。

Offer of employment

This must be in writing, outlining the terms of service and a suggested date for commencement. The employer should request confirmation in writing from the future employee. It is also courteous to inform unsuccessful candidates.

证件的核实

每一受聘人员都应提供一份个人档案的复印件。

经营者应见到下列个人档案原始文件。

1. 牙科全科医师协会年度从业证书（在英国，牙科临床技师及治疗医师同牙科医师一样均需重新注册。在没有注册前，牙科执业助理医师不能进行执业操作）。

2. 通过成为牙科维权组织成员而获得的职业过失赔偿协议（该内容也是牙科医师协会对牙科执

Document verification

Every employee should have a personal file in which copies of documents are held.

The employer must have sight of the following original documents, of which photocopies are taken for the personal file.

1. The current General Dental Council annual practising certificate (dental hygienists and therapists re-register at the same time as dentists in the UK. PCDs may not practise under a name other than that with which they are registered).

2. Indemnity against claims for professional negligence through verification of current membership of a dental de-

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业助理医师从业要求的一部分)。

3. 继续技能培训资格证明(包括超出从业内容部分)。这些证书应按其获得的时间顺序先后排列(图2-3)。由于牙科全科医师协会并未记录应聘者这些额外的技能,因此经营者有责任对其进行审核。这些技能包括:

- 局部浸润麻醉。
- X线照相术。
- 临时性塞治剂的使用,冠的暂时性粘固。
- 神经阻滞麻醉。
- 印模制取。
- 清醒麻醉。

4. 针对所有雇员的条款:

- 在过去12个月内曾接受心肺复苏培训的证明。
- 继续教育的记录。
- 当前体内HBV抗体滴度(>

fence organisation (this forms part of the GDC's code of practice for PCDs).

3. Post-qualification certification (expanded duties) The type will depend upon the year of the primary qualification (Fig 2-3). *The GDC does not record these additional qualifications; it is therefore the employer's responsibility to verify the certification.* These may include:

- local infiltration analgesia
- radiography
- insertion of temporary dressings and temporary recementation of crowns
- inferior dental nerve blocks
- impression taking
- conscious sedation.

4. For *all* employees:

- Evidence of cardiopulmonary resuscitation training within the past 12 months.
- A record of CPD.
- Evidence of the current HBV anti-

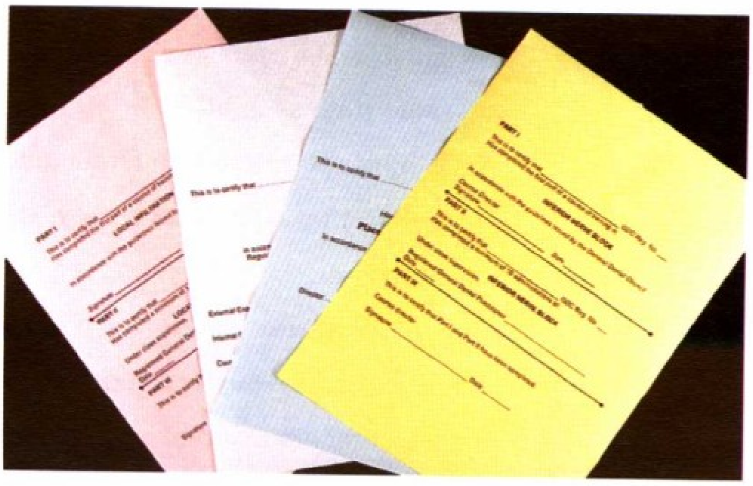


图2-3 继续技能培训资格证明

Fig 2-3 Post-qualification certificates

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100mIU/ml）证明及近 5 年来接受加强免疫的证明。

- 刑事犯罪署的无罪证明，尤其是应聘者的岗位为接触儿童及易受伤害的成年人时，更应出具此证明。

聘用合同

普通的聘用合同可以从英国牙科联合会（BDA）处获得，合同可根据实际需要进行修改。对合同内容的修改应征得双方当事人的同意并签字。在开始工作的两个月内应将合同的其中一份交给雇员。

应聘与自我经营之比较

法律并未就应聘或自我经营进行明确的界定。这主要取决于个人的情况，更重要的是当事人在工作中所形成的关系。当事人在工作中所形成的关系可通过法律对合同的分析来决定。检验的标准是"可能性平衡"（即大于50%的可能性）。税务部门将对工作状况进行调查。

工作人员可以是雇员，即受工作合同的约束；也可以是自我经营者，即

body titre status (>100 mIU ml^{-1}) and evidence of a booster injection within the past five years.

- Clearance by the Criminal Records Bureau - this is particularly important for staffwho will have contact with children and vulnerable adults.

Contract of employment

Generic contracts of employment are available from the BDA, which may be modified according to the practice requirements. This should be agreed and signed by both parties, and a copy given to the employee within two months of commencing work.

Employed verses self-employed status

The law does not define employment or self-employment. This is dependent upon individual cases and important consequences depend upon the label attached to the working relationship by the parties involved. This label may be tested under common law by looking at the contract and tests applied. The standard of the burden of proof is on "a balance of probabilities" (i.e. greater than 50% probability). The Inland Revenue or the Contributions Agency may challenge the working status.

The worker may be an *employee*, i.e. bound by a contract of services, or *self-*

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受服务条约的约束。

employed, *i.e.* bound by a contract to provide services.

员工的地位

每一名员工均是一个独立的、在合同条约规定下工作的个体（1978年雇佣关系保护条例规定）。员工及经营者间形成服务性合同，根据雇佣关系法，该服务性合同规定了工作权利，尤其是在有关解聘、额外工资的支付及孕妇权利方面。经营者有责任为员工代扣所得税及购买保险。这样一个合同条约有助于保障员工的社会权益。

Employee status

An employee is an individual who has entered into or works under a contract of employment (Employment Protection Act 1978). The employer and employee form a contract of service, which carries with it employment rights under employment legislation, especially with regard to dismissal, redundancy payments and maternity rights. It is the employer's responsibility to deduct income tax and National Insurance contributions from the employee at source. Such a contract entitles the employee to social security benefits.

应聘或自我经营？

争论的焦点之一是经营者对雇佣关系的控制程度。经营者对雇佣关系的控制程度越大，则合同更像一个服务性合同（见 Singh 1995）。

例如开业医师对临床技师／治疗医师的管理包括了工作场所的事先规划、工作时间的设定，按小时、按周或按月酬金的支付及每年休假的权利。牙科临床技师不能将自己已开始履行的合同转让给他人。

Employed or self-employed?

One of the issues in the debate is the degree of control exercisable by the employer. The greater the degree of employment control exercisable by the employer the more likely it will be that the contract is one of service (see Singh 1995).

Examples of control of the principal dentist over the hygienist/therapist include the premises designated as the place of work, the set hours, hourly, weekly or monthly payment and entitlement to annual leave. The dental hygienist also cannot subcontract which is a recognised practice in self-employment.

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争论的第二个问题与风险有关。牙科临床技师／治疗医师并未对诊所或设备的购买进行投资，他们也没必要负责设备的保养。投资因素促成了雇佣关系。诊所负责人可对员工进行聘用或解聘，并对税收的减免负责。然而牙科临床技师及治疗医师并未对员工进行管理。

检测是否是经营者的问题包括：

- 他或她是否经营自己的业务？
- 他或她是否为自己提供设备？
- 是否对投资资金的筹集及投资风险负责？
- 他或她是否接受其他的任命，从事其他的经营或被雇用？
- 是否从良好的经营中获利？

上述问题成为牙科临床技师考虑自我经营时需面对的最大难题。当自我经营具体实施时，当事人双方在合同中应明确指出：

- 在不同的情况下为多名牙科医师提供服务。
- 不定时工作。

The second area for discussion arises around the degree of risk. Hygienists and therapists do not invest in a practice or in the purchase of equipment, nor are they responsible for equipment maintenance. The investment factor favours the employment relationship. The principal appoints and dismisses staff and is responsible for tax deduction. Hygienists and therapists do not, therefore, have control of staff.

The Entrepreneurial Test or Multiple Test asks:

- Is he/she in the business on her/his own?
- Does she/he provide their own equipment?
- Is there any degree of financial responsibility for investment or degree of risk?
- Does he/she undertake any other sort of commissions, business or employment?
- Is there any opportunity to profit from sound management?

This test provides the greatest obstacle to dental hygienists if they are challenged regarding self-employment declaration. For self-employed status to be substantiated the contract between the parties must be clear regarding:

- provision of services for several dentists at different premises
- no regular hours

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- 自行决定假期。
- 自己提供设备。
- 获得一定比例的酬金。
- 在本人不在时可将业务转包给他人。

- selection of own holidays
- providing own equipment
- receiving a percentage of the fees
- able to subcontract to provide a substitute in times of absence.

聘用未获得英国资格认证的人员

在英国，任何牙科临床技师或治疗医师都需要在牙科医师协会注册。获得欧盟成员国资格认证的牙科临床技师在英国从业无需进一步培训，仅需提供具有良好的英语表达能力的证明及注册证明。可以通过多种方法来证明其英语能力，其中之一是通过国际英语水平考试（International English Language Testing System，IELTS）。该考试内容涵盖了英语听、说、读、写等方面能力的测试。

职业注册过程包括本人亲自到牙科医师协会处进行注册，注册时应带上资格证书原件，必要时还应出具出生及婚姻证明，缴纳一定的费用。

来自非欧盟的牙科临床技师及治疗医师在通过大学或皇家学院的考试

Employment of persons who have not qualified in the UK

In order for any dental hygienist or therapist to work in the United Kingdom they must be registered with the GDC. Hygienists who have qualified from a country belonging to the European Union (EU) may work in the UK without undertaking any further training, providing they have a good command of the English language and they are on the register.[1] Verification of competence in the English language can be obtained from several sources. One such source is the International English Language Testing System (IELTS). This test encompasses fluency in speaking, listening, reading and writing English.

The professional registration process involves a visit in person to the GDC by the dental hygienist with the original qualification document, birth certificate and marriage certificate if appropriate, and payment of the statutory fee.

Dental hygienists and dental therapists from non-EU countries must undertake a

[1] Dental therapists are not trained in any other countries within the European Union.

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前需进行一段时间的培训，通过考试后才能申请注册。牙科医师协会将对申请者的资格证书原件进行审核并推荐到英国的学校进行短期培训。获得非欧盟国家资格认证的牙科医师，在未经过培训和通过相应技能考试前不允许从事与牙科临床技师或治疗医师相关的工作。

period of additional training before passing the appropriate examination awarded by a university or a Royal College and subsequently applying for registration. The GDC vets the primary qualification and recommends a minimal period of training in a UK school. Dentists who have qualified from non-EU countries are not permitted to work as dental hygienists or dental therapists without undertaking the core training and passing the subsequent diploma examination.

新员工的就职

首要任务是安排一专门的职员对新的员工进行介绍，具体内容见条栏 2-1。新雇员需要一段时间来适应新环境，成为团队的一员。工作的第一天花较多的时间进行适应，将有助于将来更好地盈利，避免失误的发生，而这些失误将花更多的时间去纠正（图2-4）。

Induction of the New Employee

The principal should designate a member of staff to oversee the induction programme (Box 2-1). The new employee will need time to become familiar with the new environment. Allowing time for administration on the first day will pay dividends in the long term and avoid misunderstandings and errors, which will take longer to rectify (Fig 2-4).

评　估

正式开始工作后一个月，有必要与新员工进行一次非正式的交谈，了解其情况。这给了员工及经营者对某些问题讨论的机会，将有助于整个团队更好地工作。应每年进行一次评估，以便对过去一段时间所取得的成绩进行总结，同时对未来 12 个月的工作进行规划。

Appraisal

Approximately one month after commencement it is advisable to discuss informally the progress of the new employee. This gives the employee and the employer the opportunity to discuss and clarify issues and to encourage development and participation in the team. Appraisals are subsequently carried out annually, when

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条栏 2-1

介绍内容清单
工作环境的布局
急救设备的位置
规章制度
工作安全及放射线防护
教育及培训机会
全体会议的时间
电脑系统
预约系统
记录保存及信息技术培训
相关政策
取消预约及违约的相关规定
设备的使用
感染的控制
临床评估标准
生病或其他原因不能上班如何请假
风险处理制度（如副作用记录）
危险物品的管理
临床操作指南



图 2-4　在工作的第一天花较多的时间进行适应

Fig 2-4　Allow time for acclimatisation on the first day

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Box 2-1

Induction *Check List*

Practice layout

Location of emergency equipment

Protocols

- *health and safety at work and radiation protection*
- *investment in training and development*
- *timing of staff meetings*

Computer systems

Appointment systems

- *record-keeping and information technology training*

Referral policies

Cancellation and failed appointment policies

Operation of equipment

Infection control

Clinical audit

Reporting of sickness and other absences

Risk management protocols, e.g. adverse events log

COSHH (Control of Substances Hazardous to Health)

Practice manuals

there is a review of the objectives achieved during the period and a discussion of the development plan for the ensuing 12 months.

每个工作人员均应建立属于个人的档案资料。应该有自己的个人计划，包括短期（未来 12 月）及长期（未来 3～4 年）。每个人应该完整的记录资料，并保留所有总结评估的复印件，继续再教育证明也应保留在个人档案里。每个工作人员还应该保留一份其雇

Every member of staff should create their own personal file to be kept in their possession. They should also develop a personal development plan, both short term (next 12 months) and longer term (next 3–4 years). The staff should complete the record themselves and copies of all ap-

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主／经营者对其恰当的评价及聘用合同的复印件。

praisal summaries and CPD certification should be retained on their personal file. The staff member should also have a copy of the appropriate summary, jointly agreed by their employer/manager.

虽然继续教育并非牙科医师协会对牙科执业助理医师要求内容的一部分，但是否接受继续教育是具有良好技能的证明，在不久的将来可能成为强制性的要求。

Although CPD is not yet a GDC requirement for PCDs, it is evidence of good practice and will become mandatory in the future.

对牙科医师的指导原则也同样适用于牙科执业助理医师（要求在5年内完成250个小时的继续教育，包括一般性的继续教育及可核实的继续教育）。250小时中至少有75个小时为可核实的继续教育，剩余的为一般性的继续教育。牙科医师协会对可核实的继续教育的教育标准是：

- 简明的教育目的及目标。
- 参与的结果明确。
- 教学质量控制——参与者必须能够有机会对受教育的品质进行评论。

必须有学业证书或课程注册文件以证明参加了可核实的继续教育。

The guidelines for dentists (250 hours of CPD required over a five-year period with a mix of general and verifiable CPD) will be applied to PCDs. At least 75 of the 250 hours must be spent on undertaking verifiable CPD and the remainder may be general CPD. The GDC's educational criteria for verifiable CPD include:

- concise educational aims and objectives
- clear anticipated outcomes
- quality control—the participant must have an opportunity to comment with a view to improving quality.

Proof of attendance or involvement in verifiable CPD must be available in the form of a certificate or course registration document.

作为投资，经营者为牙科临床技师或治疗医师的课程学习提供资金，将获得全体工作人员在其他方面的回报。在英国，牙科临床技师及治疗医师无法参加当地研究生院组织的课程学

Investment by the practice principal in financially supporting the dental hygienist or dental therapist on courses will reap reward in terms of fulfilled staff. In England, dental hygienists and dental therapists do

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习，这些课程仅限于牙科医师，并通过当地的基层管理联合会来进行。他们也可以参加这些课程的学习，但需要付费，参加这些课程的学习将是一个难得的机会。经营者可采取一些措施使员工知道这些课程的存在，并参与到课程的学习中，以便提高整个团队的实践技能及工作水平。目前，牙科临床技师对于继续教育表现出失望的态度。部分原因是他们不能获得与牙科医师课程相关的信息。大部分与牙周病学有关的课程适合牙科临床技师及治疗医师的学习。现在，课程的组织者更加强调对整个治疗队伍的培训，这将进一步鼓舞牙科临床技师及治疗医师参与课程的学习。包括英国牙科临床技师联合会（British dental hygienists association，BDHA）及英国牙科治疗医师联合会（British association of dental therapists，BADT）在内的协会都为其成员举办全国及地方性的学术会议。

not receive notification of courses organised by regional postgraduate deaneries, which are circulated only to dentists through the local primary care trusts (PCTs). They are, however, eligible to attend these courses, and as there is no course fee, it is a worthwhile opportunity. The principal can do much to bring to the attention of staff the existence of these courses and attending courses as a team helps develop new practice protocols and teamwork. Dental hygienists have expressed their disappointment in the current underprovision of post-qualification courses. Part of the problem is that they are unable to access the published information on courses for dentists. The majority of courses on periodontology would be suitable for hygienists/therapists to attend. Course organisers are now placing more emphasis on team training, which should encourage attendance. Both the British Dental Hygienists Association (BDHA) and British Association of Dental Therapists (BADT) hold national and regional meetings for their members.

专业期刊

在全科医师诊所工作的牙科临床技师及治疗医师获得相关牙科杂志的机会较小。他们可通过加入一些专门的社会团体，通过会员资格使他们可以获得一些期刊，但需要支付的费用

Professional journals

Hygienists and therapists working in general dental practice have limited opportunity to access refereed dental journals. They may join certain specialist societies, and membership would entitle them to journal

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可能会成为阻碍他们加入的因素。有些学术团体如英国牙周病学会（British society of periodontology，BSP）将牙科临床技师及治疗医师作为"会员"提供服务，其比例接近学会服务对象的33%。BSP还为参加全国性及国际性会议者减少会费，同时其地方性教育计划可从某网站上获取。电子版杂志是一种获得最新的文献信息的廉价方法。

distribution but the cost may be a deterrant. However, learned societies such as the British Society of Periodontology (BSP) offer hygienists and therapists their services as "associates" of the society at subsidised rates (33%). The BSP also offer reduced subscription rates for associates at national and international meetings and their regional educational programme is available on their website. The electronic journals provide a cheaper option for keeping up to date with the literature.

一些有用的网址

下列网站中有相关课程及出版物方面的信息：

- 英国牙周病学协会：www.bsperio.org
- 英国牙科联合会：www.bda-dentistry.org.uk
- 英格兰皇家外科学院：www.rcseng.ac.uk
- 爱丁堡皇家外科学院：www.rcsed.ac.uk
- 格拉斯哥皇家外科学院：www.rcpsglasg.ac.uk

Useful websites

The following websites have information concerning courses and publications.

- British Society of Periodontology: www.bsperio.org
- British Dental Association: www.bda-dentistry.org.uk
- Royal College of Surgeons of England: www.rcseng.ac.uk
- Royal College of Surgeons of Edinburgh: www.rcsed.ac.uk
- Royal College of Surgeons of Glasgow: www.rcpsglasg.ac.uk

临床考核

评估会议为针对牙科临床技师或治疗医师的临床考核方案提供了讨论机会。讨论结果可提交到团队例行会议讨论，并建议根据现行的条例进行修改。

Clinical audit

The appraisal meeting is an opportunity to discuss a potential audit project on which the dental hygienist or therapist may take the lead. This can then be reported to the team at a practice meeting and recom-

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以前讨论的有关牙科临床技师及治疗医师在不同场所从业的内容，是临床考核方案需进一步关注的焦点。

mended changes to existing protocols agreed.

Peer review between hygienists and therapists in practices at different locations is a further focus point for clinical audit.

临床相关要点

下列是开业医师的责任：

- 遵守职业雇佣法规及牙科医师协会的指导原则。
- 为所有工作人员更新记录。
- 在每年的一月份为所有已注册的牙科执业助理医师领取年度从业证书。
- 获得年度职业赔偿保险证明。
- 获得年度心肺复苏培训证明。
- 核实牙科执业助理医师的培训情况。
- 鼓励所有成员接受继续教育，并对自身进行临床评估。
- 保证牙科执业助理医师的工作内容在专业管理法规规定的范围内，牙科执业助理医师的能力与牙科医师协会规定相一致。

Key Points of Clinical Relevance

It is the principal dentist's responsibility

- To comply with employment legislation and the GCD's guidelines.
- To keep up-to-date records of all staff.
- To obtain a copy of the annual practising certificate of all persons on the PCD register in January of each year.
- To obtain annual verification of professional indemnity insurance.
- To obtain annual verification of cardio pulmonary resuscitation training.
- To verify additional training of PCDs from time to time.
- To encourage all members of the team in professional development and individuals in clinical audit.
- To ensure that the PCD works within the Code of Professional Conduct and competencies according to the GDC curricula.

拓展阅读
Further Reading

1 British Dental Association. Contract of Employment for Dental Hygienists. Available to members of the British Dental Association from 64 Wimpole Street, London W1G 8YS.

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2 Inland Revenue. Employed or Self Employed. London: Inland Revenue Business Services IRS6, 1999.

3 General Dental Council. The Rolls of Dental Auxiliaries and Dentists Register (updated annually). London: General Dental Council.

4 Hillam D. A survey of hygienists qualifying from the Liverpool School of Dental Hygiene 1977-1998. BrDentJ 2000;188:150-153.

5 Singh A. Employee or self-employed. Dent Health 1995;34:5-7.

6 International English Language Testing System. Cambridge: University of Cambridge Local Examinations Syndicate, 1997-2003.

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第3章 协同工作

Working Together

目　的

本章的目的是指导开业医师如何发挥其团队领导作用。如何有效地发挥牙科临床技师在牙周非手术治疗中的作用。

Aim

This chapter aims to guide the practitioner through their role as the team leader and how they can effectively utilise the dental hygienist in the non-surgical management of periodontal diseases.

要　点

阅读本章，能够使开业医师合理地发挥主导作用（图3-1），协调牙周专科医师、牙科临床技师与患者间的关系，以获得治疗成功。影响其因素如下：

- 疾病可能表现出侵袭性。
- 复杂的全身及局部危险因素（见Chapple and Gibert 2002）。
- 患者的理解及依从性。
- 操作者的经验及时间的安排。
- 社会经济因素的制约。

Outcome

Having read this chapter the practitioner should be able to rationalise the key roles of himself or herself (Fig 3-1), the specialist periodontist, the dental hygienist and the patient in achieving a successful therapeutic outcome, and the factors influencing this such as:

- the opportunistic aggressive nature of the disease
- complicating systemic and local risk factors (see Chapple and Gilbert 2002)
- patient understanding and compliance
- operator expertise and time management
- limiting socioeconomic factors

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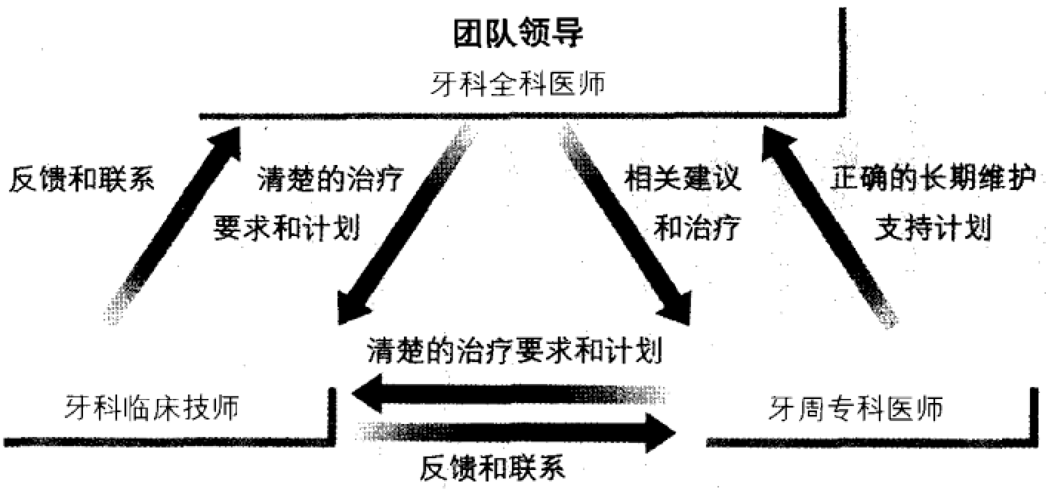


图 3-1 牙科全科医师是整个团队的领导

Fig 3-1 The general dental practitioner as the team leader

• 严格的支持（维护）治疗。

引 言

成功治疗牙周病的第一步是做出诊断并制定合理的治疗计划。这是牙科医师的法律职责。在英国，有关牙科全科医师治疗的患者中牙周病流行情况的记录证明是令人失望的。Morgan 2001年对464例临床记录检查发现，仅20%对牙周情况进行初查，1.5%（7例）有某种形式的牙周记录表格。然而，英国国家健康中心每年用于牙周病治疗的成本高达174亿英镑（DPB网站 2002）。这些数据是否暗示了下述疑问：

• rigour of the supportive care (maintenance) programme.

Introduction

The first step in successful management of periodontal disease is to establish a diagnosis and formulate an appropriate treatment plan. This is the dentist's legal responsibility. The evidence for recording the prevalence of periodontal diseases in patients managed in general dental practice in the UK is currently very disappointing. In a study by Morgan in 2001, who examined 464 clinical records, only 20% included periodontal screening and only 1.5% (7 cases) had some form of periodontal charting – yet the cost of periodontal care to the National Health Service per annum is over £174 million (DPB website

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- 治疗的实施是否缺少诊断？
- 临床实践中是否未对患者进行筛选？
- 临床实践中是否未记录筛选及牙周检查的情况？

上述调查数据表明，英国国家健康中心每年用于牙周治疗的支出缺乏临床记录的证实。

只有对牙周病患者进行初步筛选，并对每一名患者在每次检查及复查时分别进行记录，才能发现最需要牙周治疗的人群，并将这些"高危"人群作为治疗的对象。要求患者每6个月进行"常规洁治及刮治"是不恰当的。患者需要针对其本人的治疗方案，尤其是针对易复发的位点进行治疗。该观点的背景资料在本系列丛书的第一本中有介绍（Chapple and Gibert 2002）。

在没有证据显示疾病存在时，不需要对患者进行治疗，包括全口及个别牙齿。应该建立根据需要进行选择性刮治及根面平整的概念，并向患者解释这种概念的转变（见第 5 章）。

开业医师应注意一些潜在的诉讼。

2002). Does this imply that:

- Treatment is carried out without a diagnosis?
- Screening is not routinely performed in practice?
- Screening and periodontal examination are not recorded in practice?

These data suggest that current expenditure on periodontal therapy under the NHS service regulations may not be justified by the evidence documented in the clinical notes.

Only by screening and recording each and every patient at every examination and recall appointment will the periodontal needs of the population be identified and treatment targeted at patients of "high risk". It is inappropriate to prescribe for the patient a "routine scale and polish" every six months. The patient requires an individual care plan specifically to target sites of recurrent disease. The background to this concept is clearly outlined in the first book of this series (Chapple and Gilbert 2002).

Where there is no evidence of disease then no treatment is required. This may reflect on the entire mouth or individual teeth. The concept of selective scaling and selective root surface debridement (RSD) according to need must be established. This shift of emphasis must be explained to the patient (Chapter 5).

The practitioner must also be mindful of

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根据牙科维权协会（2001～2002）的研究显示，目前因牙周病诊断及治疗失误所导致的索赔占协会总索赔量的4%。索赔案件正逐年上升，索赔费用占协会赔偿数额的一半。失去其天然牙列的患者，在明确部分原因是由于医师的疏忽所造成时，会要求对失牙进行种植体修复，这就给协会产生较大的费用支出，进而转加到医师身上。

法律允许"侥幸的机会"。医师因为患者以往忽略口腔卫生而认为其对治疗不在意的想法是不正确的。所有的治疗方案均应与患者进行讨论。如果患者对所建议的方案不接受，应被告之可能的后果，并将讨论情况记录在患者的临床记录中。将"临床实践结果"宣传单给患者是很好的尝试。这将作为额外的信息提供给患者，同时这些实际情况均应写入临床记录中（图3-2）。

牙周病治疗计划及牙科临床技师的治疗安排

基本牙周情况检查（basic peri-

potential litigation. Currently, claims for failure to diagnose and treat periodontal disease amount to 4% of total claims, according to the Dental Defence Union (2001–2002). The number of claims is increasing, as is the average cost of settlement by defence organisations. Patients who have lost their natural dentition through proven negligence on the part of a practitioner now expect settlements to cover the provision of implants and their superstructures at enormous cost to the defence agencies and thus to the profession.

There is legal recognition of "the chance for a chance". It is not good practice for the practitioner to assume that the patient is not interested in treatment because their oral hygiene has been neglected previously. All treatment options should be discussed. If the patient chooses not to follow the advice they should be informed of the potential consequences and a record of the discussion made in the patient's clinical notes. It is good practice to utilise "practice produced" patient information leaflets. These may be given to the patient as supplementary information and evidence of this fact should be recorded in the clinical notes (Fig 3-2).

The Periodontal Treatment Plan and Referral to a Dental Hygienist

Details of the basic periodontal exami-

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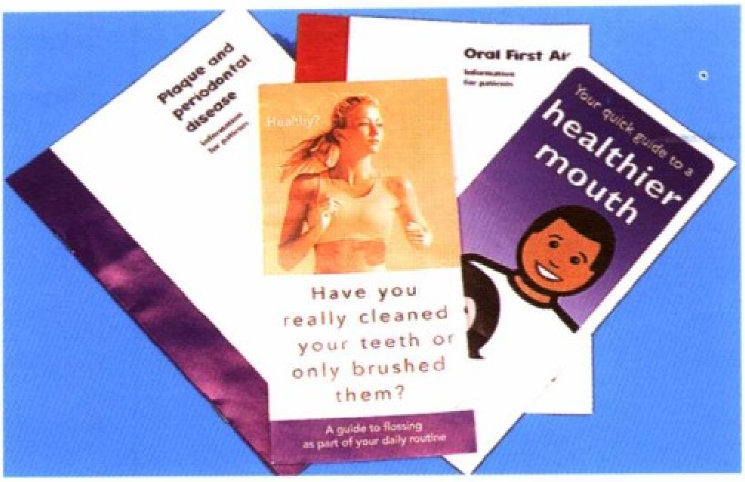


图 3-2 患者宣传单

Fig 3-2 Patient information leaflets

odontal examination，BPE）的详细资料及对初步检查的综合判断在本系列丛书的第一本中有介绍（Chapple and Gibert 2002）。在基本牙周情况检查中，记分值为 4 或 4* 的任何区位，都应详细地记录牙周袋深度。钝头探针探诊出血情况也是临床评估的一部分内容。高质量的 X 线片对评估骨缺损的程度及方式也是十分重要的（见 Chapple and Gibert 2002）。牙科医师有责任告知患者疾病的诊断、预后并探讨所有的可供选择的治疗方案。对于疾病晚期的患者，讨论的内容应包括拔牙及最终的义齿修复。如果治疗可能达到的结果的记录是明确的（即记录骨缺损的百分比），不仅可避免潜在的法律诉讼，也可为团队其他成员提供有价值的信息。牙科临床技师在对患者进行治疗时应有患者的X线片以便阅读。通常患者会向牙科临床技师询问其牙齿的预后情况。牙科临床技师虽然不能做这方面的陈述，但如果预后已经写在了治疗计划中，牙科临床技师可

nation (BPE) and a comprehensive account of the initial screening visit is covered in the first book of this series (Chapple and Gilbert 2002). Following the BPE screen, any sextant coding 4 or 4* will require detailed recording of probing pocket depths. Recording of bleeding on blunt probing also forms part of the clinical assessment. Good quality radiographs to assess the degree and pattern of bone loss are also essential (see Chapple and Gilbert 2002). It is the responsibility of the dentist to inform the patient of the diagnosis and prognosis and discuss all treatment options. Where disease is advanced this may include extractions and eventual prosthetic replacement. If the documentation of potential outcomes is robust (i.e. percentage of bone loss is recorded), it not only avoids potential litigation but it also provides valuable information for other team members. The dental hygienist should have the radiographs on view when treating the patient. Patients

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进一步认可并支持牙科医师的决定。这有利于整个团队的团结工作。

frequently ask the hygienist questions regarding the prognosis of their dentition. It is not within the remit of the hygienist to make such statements, but if outcomes are written in the care plan, the hygienist can endorse and support the decisions of the prescribing dentist. This consolidates the team approach.

团队内部交流

在牙科全科医师诊所工作的牙科临床技师们普遍感到很孤立（图3-3）。他们的临床工作性质要求始终在合法的范围内，因此理解患者的整个治疗方案将有助于他们的工作，也就是说，他们为患者提供的治疗内容与其他临床医师的工作是同时进行的。这也将有利于牙科临床技师从长远的目标出发为患者治疗。

Communication Within the Team

A common concern expressed by dental hygienists working in general dental practice is that they feel isolated (Fig 3-3). Whilst the nature of their clinical work will always be within the legal framework, it is helpful for them to understand the holistic management of the patient, i.e. where the care they are providing juxtaposes with the care that other clinicians are providing. This helps the hygienist focus the patient on longer-term goals.

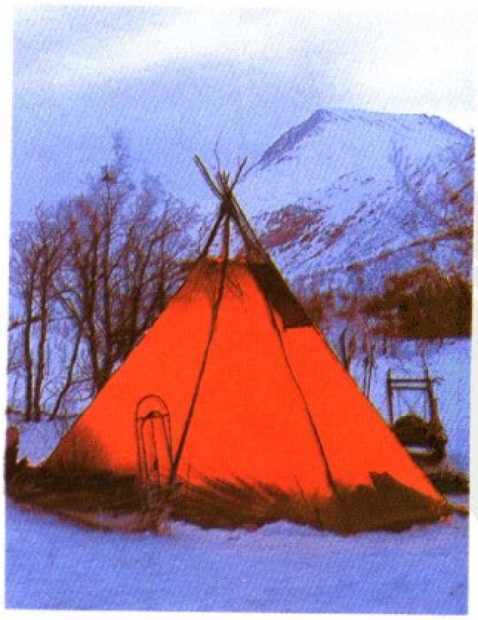


图 3-3 孤立的牙科临床技师

Fig 3-3 Isolation of the dental hygienist

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因此，同事之间良好的沟通显得十分重要，这不仅使共事的员工满意，同时避免在开处方过程中出现错误及武断的现象。

在治疗开始及整个治疗过程中对患者的牙周情况作出准确、客观的记录是必须的。记录必须采用可识别的图表及指标。指标对于以下情况是极其重要的：

- 反映患者接受宣教的情况，并且可为其本人设置目标。
- 为临床医师决定患者是否需接受更复杂的治疗提供信息。
- 满足医疗法规的需要。

采用"好"、"一般"、"差"这样的词汇描述来反映菌斑控制的情况是不可行的，因为专业人员在相互陈述确切情况时，使用这些词汇来表达并不客观。菌斑堆积和龈缘探诊即刻出血记录应采用可重复的记分系统（见Chapple and Gilbert 2002）。对于临床医师来说只有在菌斑可见的情况下，才能对菌斑堆积部位进行准确地评分。因此，推荐使用菌斑染色显色剂（图3-4）。

不同类型指标的使用各有优缺点。选择何种指标在临床医师中必须统一，以便于病例讨论和转诊记录。患者的吸烟史应与其他建议一起记录在开始

Good communication is therefore important, both to provide fulfilment to the staff in the workplace and to avoid errors and ambiguity in the prescribing process.

Accurate objective records of the patient's periodontal status at the onset of therapy and throughout treatment are essential. This is achieved by using recognised charts and indices. Indices are vital for:

- the education of the patient and for individual target setting
- information for clinicians to determine entry into more complex therapies
- medicolegal purposes.

Terms such as "good", "fair", or "poor" relating to the patient's plaque control are not acceptable as they are not objective methods of expressing factual information between professionals. Plaque accumulation and marginal (immediate) bleeding should be recorded using a reproducible scoring system (see Chapple and Gilbert 2002). The location of plaque deposits can only be scored accurately if the plaque is visible to the clinician. The use of a disclosing dye is therefore recommended (Fig 3-4).

There are advantages and disadvantages with the use of various indices. Whichever is selected should be uniformly used by all clinicians in the practice to facilitate case

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图3-4 使用菌斑显示剂显示菌斑

Fig 3-4 The use of disclosing dye to visualise plaque

治疗阶段内。

为治疗作出指示的牙科医师

当为患者制定治疗计划时，医师应对口腔健康的所有方面给予同等程度的关注。例如，"你仅仅需要刮治"或"仅需要临床技师进行快速地清洁"等用语暗示相对于牙体修复而言，牙周健康较为不重要。这种形式的用语可能无形中降低牙科临床技师的技能，

discussion and record transfer. History of tobacco use by the patient should also be recorded in the notes at the initial stage, along with any advice given.

The Dentist as a Prescriber of Treatment

When presenting the treatment plan to the patient, care should be taken to give equal emphasis to the importance of all aspects of oral health care. For example, phrases such as "you just need a scale" or "only a quick clean up with the hygienist" imply lesser importance of periodontal health,

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让患者以为牙面沉积物的去除仅有助于改善美观的印象。初诊时，开业医师和患者在讨论治疗计划时应将牙科临床技师考虑进去，并向患者介绍其优点。临床医师在患者在场时进行病例讨论，是十分有意义的。这种方式建立了〞三方通话模式〞。通过该方式，患者成为其治疗计划的被告之者与参与者（图 3-5）。特别是在初诊时就与患者进行治疗计划讨论，这种方式是非常有用的。如果这个时候牙科医师向患者介绍牙科临床技师，可克服患者不愿接受其他医师治疗的心态。这不仅有助于促进同事间的关系，对于促进患者接受治疗也是十分重要的。患者需要了解：

- 牙科临床技师的技能及作用。

relative to restorative needs. They also undermine the skills of the hygienist and may give the patient the impression that deposit removal is only for improvement in aesthetics. At the initial appointment the practitioner should discuss the involvement of the hygienist in the care plan and advise the patient of the advantages of referral. Case discussion between clinicians in the presence of the patient is very worthwhile. This establishes a "trialogue" in which the patient becomes informed and involved in their care plan (Fig 3-5). In particular, this is helpful at the initial appointment when the treatment plan is being discussed with the patient. If the dentist introduces the dental hygienist to the patient at this stage, it may help to overcome the patient's initial reluctance to see another clinician. This continuity may help to foster the professional relationship that is so important for patient motivation. The patient needs:

- information on the skills and role of the hygienist

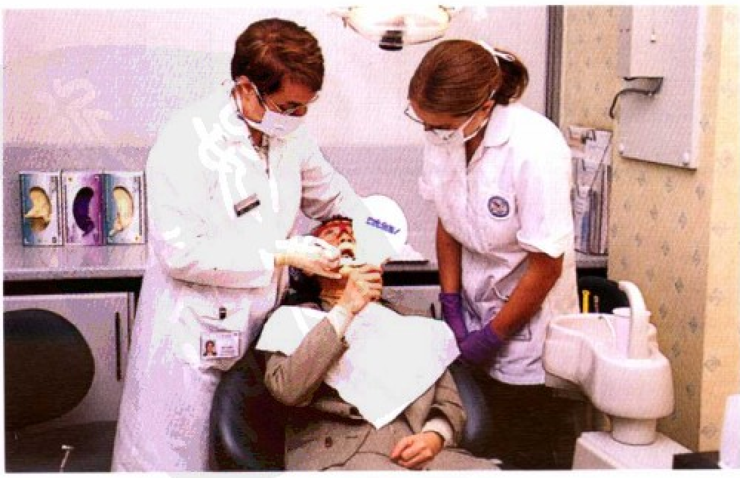


图 3-5　患者参与到治疗计划中

Fig 3-5　Including the patient in the care plan

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- 治疗所需时间的估计。
- 费用估计。
- 再次到牙科医师处就诊复查的时间。
- 对治疗结果的确切理解。
- 治疗的副作用，尤其是牙龈的退缩及根面敏感。

牙科临床技师需要了解：

- 疾病的诊断。
- 清楚的治疗计划（法律规定处方应为书面形式，应有医师的签名及日期，处方的有效期为 12 个月）。
- 当需要时，应有相关人员的协助。

临床记录是团队领导与牙科执业助理医师间相互交流的主要途径。开业医师最好使用统一格式的表格进行临床记录。这种方式有助于临床医师关注患者最需要治疗的内容。它可避免因书写病历而浪费时间，可依据就诊的次数确定治疗的时间，或对特定阶段治疗的完成作出时间规定。牙周袋记录表、菌斑指数记录表、探诊出血指数记录表的范本见图 3-6 至图 3-8。

- an estimate of the time commitment
- an estimate of the financial commitment
- information on when they will see the dentist for reassessment
- a realistic understanding of treatment outcomes
- the side effects of treatment, especially recession and sensitivity.

The hygienist needs:

- diagnostic information
- a clearly stated treatment plan (It is a legal requirement that the prescription is in writing and signed and dated by the practitioner to cover a maximum 12-month period.)
- support from the referrer, as and when required.

The clinical records will serve as the main means of communication between the team leader and the PCD. The practitioner may like to consider the use of a pro forma. This method helps the clinician to focus on the needs of the patient. It avoids time-consuming writing of scripts and it is helpful to indicate the time frame of treatment in terms of numbers of visits, or time recommended for completion of a specific phase of management. A sample pro forma, a periodontal pocket chart, a plaque score chart and a bleeding score chart are illustrated in Figs 3-6 to 3-8.

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临床技师处方（请打勾）

专业临床技师 ☐

患者姓名/条形码 ☐

日期……

卫生学校：

初级 ☐

高级 ☐

相关疾病病史（见病史表）☐

诊断 ☐　基本牙周情况检查

口腔卫生宣教

全口 ☐　局部（详细位点）

菌斑显示 ☐　改良Bass刷牙法 ☐　其他指定刷牙方法……

牙线/牙带 超级牙线 ☐　迷你型邻面刷 ☐　牙间刷详细位点

检查记录

治疗前 ☐　治疗后 ☐

全口 ☐　局部详细位点

菌斑指数 ☐　牙周袋检查 ☐　BOP ☐　松动度 ☐

刮治

全口刮治 ☐　局部刮治详细位点

初步刮治 ☐　精细刮治 ☐

根面平整

所有≥5mm的位点 ☐

必要时在局麻下进行 ☐

复诊次数 ☐　需要多次复诊（打勾）☐

预防性抗生素使用（详细说明）……

局部应用氟化物（详细说明）……

饮食分析/建议……

回访 ☐ 月　医师打印/盖章 ☐

临床医师打印/盖章……　医师签名……

图 3-6　指示牙科临床技师操作的格式化处方样本（引自教学医院）

Fig 3-6　An example of prescription pro forma (from a teaching hospital) for referral to the dental hygienist

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上颌颊侧

日期	治疗阶段																
	牙龈退缩																
	基 线																
	卫生宣教																
	根面平整																
	第一次复诊																
	第二次复诊																
		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

上颌腭侧

日期	治疗阶段																
	基 线																
	卫生宣教																
	根面平整																
	第一次复诊																
	第二次复诊																
		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

下颌颊侧

日期	治疗阶段																
	牙龈退缩																
	基 线																
	卫生宣教																
	根面平整																
	第一次复诊																
	第二次复诊																
		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

下颌舌侧

日期	治疗阶段																
	牙龈退缩																
	基 线																
	卫生宣教																
	根面平整																
	第一次复诊																
	第二次复诊																
		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

图 3-7 牙周袋检查表

Fig 3-7 A periodontal pocket chart

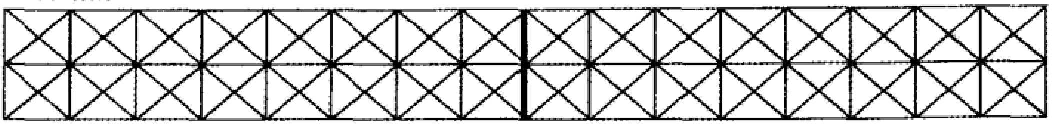
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全口牙周状况评估

患者姓名：＿＿＿＿＿＿　　登记号：＿＿＿＿＿＿

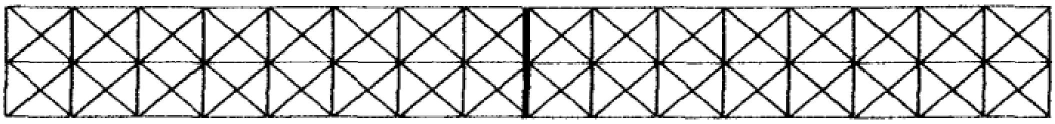
日期：＿＿＿＿＿＿　　记录者：＿＿＿＿＿＿

菌斑指数



总分：＿＿＿＿　　菌斑牙面%：＿＿＿＿
无菌斑牙面%：＿＿＿＿

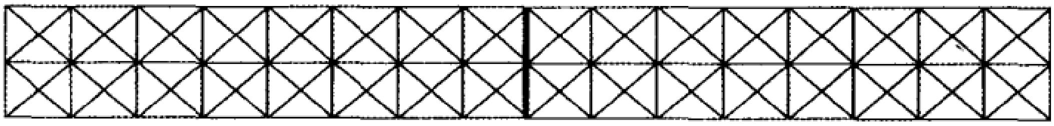
出血指数



总分：＿＿＿＿　　出血值%：＿＿＿＿

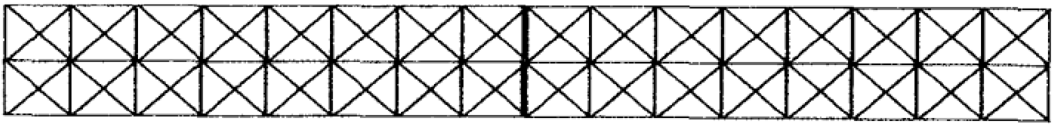
日期：＿＿＿＿＿＿　　记录者：＿＿＿＿＿＿

菌斑指数



总分：＿＿＿＿　　菌斑牙面%：＿＿＿＿
无菌斑牙面%：＿＿＿＿

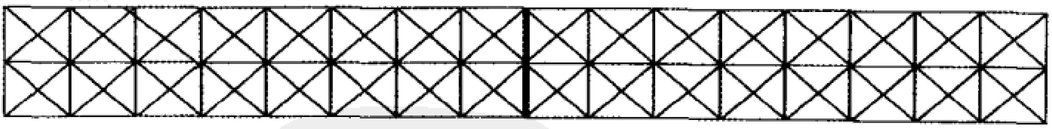
出血指数



总分：＿＿＿＿　　出血值%：＿＿＿＿

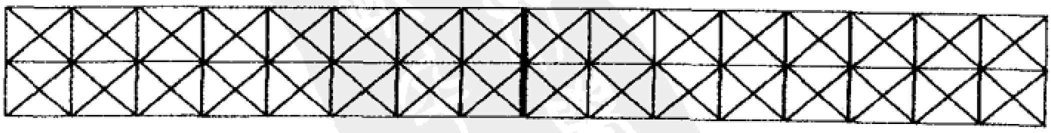
日期：＿＿＿＿＿＿　　记录者：＿＿＿＿＿＿

菌斑指数



总分：＿＿＿＿　　菌斑牙面%：＿＿＿＿
无菌斑牙面%：＿＿＿＿

出血指数



总分：＿＿＿＿　　出血值%：＿＿＿＿

图 3-8　菌斑及探诊出血值记录表
Fig 3-8　A plaque and bleeding score chart

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同时，格式化表格也避免了一些不合适的指示用语（条栏 3-1）。这些用语是由于不可避免的自发性行为习惯产生的。开业医师还应考虑"表格以外"的内容，并单独记录表格中未列出的患者个人资料。这些内容可写在表格的上方。

条栏 3-1

不规范用语示例

牙科临床技师请接诊及治疗；

Scp x1（或 S&P）；

请按 10a 项处理；

口腔卫生太糟糕了，转牙科临床技师。

任何"治疗处方"内均不应体现出牙周病的性质或严重性，否则将违反医学法规。

同时，依据治疗开处方，可为临床医师节约更多的时间，以便为牙科临床技师分析所记录的基线水平的指标，包括探诊深度在内。开业医师必须对患者牙周基本情况进行检查并对 X 线片作出解读（见 Chapple and Gilbert 2002）。治疗后详细情况的表格应由开业医师来填写。使他们对每个患者第二阶段所需的治疗有所"感觉"。

Whilst pro formas help avoid unacceptable prescribing (Box 3-1), they suffer from the inevitable consequence of automatic behaviour patterns. The practitioner must remember to "think outside the box" and separately document individual patient data that does not appear on the pro forma. This can be achieved by writing on top of the pro forma.

Box 3-1

Examples of unacceptable prescriptions

Hygienist please see and treat

Scp x1(or S&P)

Item 10a please

OH poor, ref. Hygienist

None of those "prescriptions" gives any indication of the nature or the severity of periodontal disease and would be indefensible medicolegally.

Whilst considering the treatment to be prescribed it may be more economic of the practitioner's time to designate the recording of base line indices, including probing depths to the hygienist. However, the practitioner must perform the BPE and report on the radiographs (see Chapple and Gilbert 2002). The post-therapy detailed charting should also be performed by the

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应培训牙科临床技师记录下述内容：

- 牙周探诊深度。
- 牙龈退缩值。
- 临床附着水平。
- 牙松动度。
- 根分叉病变。
- 全口牙列探诊出血情况（记录为有或无）。
- 全口菌斑堆积情况（记录为有或无）。
- 牙移位（通过模型测量研究）。
- 咬殆情况（静态及动态观察）。

应培训牙科临床技师对患者提供下述建议及宣教：

- 饮食习惯（控制龋病及磨耗）。
- 戒烟。
- 口腔软硬组织、种植体及修复体的清洁。
- 向患者解释为何其为特殊病例，尤其是牙周炎"易感"病例。

应使患者明白他们所面临的问题具有特殊性，需要与其同龄人及家人采用不同的口腔健康护理（就像糖尿病患者需要对他们的饮食及血糖水平进行控制一样，牙周病患者需要对菌斑水平及其控制情况进行监测）。

practitioner, to enable them to "get a feel" for the requirements of the second phase of therapy for the individual patient.

Dental hygienists are trained to record:

- periodontal probing depths
- recession
- clinical attachment levels
- mobility
- furcation involvement
- full mouth bleeding (dichotomously)
- full mouth plaque deposits (dichotomously)
- drifting (by measurement, study models)
- occlusion (static and dynamic).

Dental hygienists are trained to advise and educate on:

- dietary habits (caries and erosion control)
- smoking cessation
- oral cleaning of hard and soft tissues, implants and prostheses
- why the patient is a special case, specifically "at risk" of periodontitis.

The patient must feel that they have a unique problem which requires oral hygiene practices different from their peers and family (rather like the diabetic patient who needs to monitor what they eat and their blood glucose levels, the patient with periodontitis needs to monitor plaque lev-

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治疗处方具有的特殊作用是指明了患者接受牙科临床技师治疗的次数，以及到牙科医师处复查的时间。这避免了无时间限制处方的出现。法律规定处方的有效期不超过12个月。如果处方中没有指明复查时间，则没有明确的终止时间点以对治疗进行评估。

通常情况下，患者再次复查时，先在牙科临床技师处进行洁治，然后再到牙科医师处进行硬组织的检查。这种方式是不正确的，因为牙科临床技师是根据6个月前的治疗"处方"对患者进行治疗；同时也是不合法的，因为处方并未对患者现在的情况进行诊断，因此也就未对患者现在所需要的治疗内容做出决定。此外，医师还未对患者现在的情况进行评估，并且在牙科临床技师对患者进行治疗后也不能对其进行准确的牙周探查。

牙科临床技师需要牙科医师的长期支持。治疗计划根据患者全面的口腔护理需要做出相应的决定，尤其是患者需要特殊的牙周护理时。如果患者患有侵袭性牙周炎，有必要对其复诊时间进行规定，同时根据全身服用

els and how they control them).

Of particular help in the prescription is guidance on the number of appointments for treatment with the hygienist and an indication of when review appointments with the dentist should be expected. This is also necessary to avoid open-ended prescriptions. It is illegal to prescribe for longer than 12 months. Without a review date, there is no indication of an end-point to evaluate the treatment.

It is a relatively common practice for the patient at a recall appointment to see the dental hygienist first for scaling and then see the dentist for the hard tissue examination. This is unacceptable practice because the hygienist is carrying out treatment on a "prescription", which is six months old! Whilst this is not "illegal" the prescription does not carry a current diagnosis and therefore will not address the current treatment needs of the patient. Furthermore, the prescriber will not be assessing the current medical history, and will be unable to perform accurate periodontal probing after periodontal intervention by the hygienist.

Dental hygienists require continuous support from their prescribing dentist in making decisions regarding the patient's overall care and, in particular, if the patient requires specialist periodontal care. If the patient has aggressive periodontitis, it is

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抗生素的情况决定何时复诊。因此，根据开业医师的诊断、牙科临床技师的临床技能水平，以及可通过就诊时间的安排使“高危”患者获得及时的临床治疗。如果患者所患疾病的危险性较小则不需要如此密集的治疗，牙科医师有责任通过调整处方中就诊的次数及复查频率来体现这种情况。

helpful to designate a time frame for appointments and whether liaison will be required regarding the administration of systemic antibiotics. Therefore, based on the practitioner's diagnosis, and the hygienist's clinical expertise, valuable clinical time can be appropriately targeted at the "at risk" patients with appointments scheduled accordingly. Patients in low risk categories do not require the same degree of intensive therapy, and it is the dentist's responsibility to indicate this by the number and frequency of visits on the prescription.

如果患者患有内科疾病，牙科医师有责任保证牙科临床技师的临床操作是恰当的。如果需要预防性使用抗生素，牙科医师应指明并为患者开处方；牙科医师应负责任何与抗凝治疗有关的调整；必要时，为局部麻醉所用麻醉剂开处方。

If the patient is medically compromised, it is the dentist's responsibility to ensure that care during the hygienist's phase of management is appropriate. The dentist should indicate if antibiotic prophylaxis is required and prescribe it for the patient; they should organise any adjustment of anticoagulant therapy; and prescribe specific local analgesic agents, if required.

如果两种治疗项目可同时进行，以减少抗生素的使用量，那么牙科医师将负责对治疗进行协调，如刮治及拔牙可在一次就诊时完成。但是，牙科临床技师有责任在每次复诊时确认患者的药物使用情况，并将任何变化告知医师。

If two kinds of treatment can be combined to conserve the administration of prophylactic antibiotics, then it is the dentist's responsibility to organise this—for example, scaling and an extraction in one appointment session. It is, however, the dental hygienist's responsibility to check the medical history at every visit and report any changes to the dentist.

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牙科开业医师作为团队领导作用的总结

牙科全科医师的责任包括：

- 疾病的诊断。
- 制定治疗计划。
- 将治疗项目分配给牙科执业助理医师。
- 负责患者全面的口腔护理。
- 医疗质量控制及评估。

对牙科临床技师进行治疗性指示的总结见条栏 3-2。

条栏 3-2

详细的书面指示（可使用表格）
基础治疗就诊次数的指示。
采用局部麻醉。
预防性使用抗生素及进行抗凝治疗。
到牙科医师处复查的日期。

牙科临床技师的作用

第一阶段治疗

在最初的"口腔健康"治疗阶段，牙科临床技师应负责：

- 教育患者使其明了疾病产生的原因及治疗方法，使患者的观念

Summary of the role of the dental practitioner as the team leader

The general dental practitioner is responsible for:

- Diagnosis.
- Treatment planning.
- Delegation to PCDs.
- The patients overall care plan.
- Quality control and audit.

Guidelines for prescribing to the dental hygienist are summarised in Box 3-2.

Box 3-2

Detailed written instructions (a pro forma may help).
Indication as to the number of visits for initial therapy.
Use of local analgesia.
Organisation of antibiotic prophylaxis and management of anticoagulant therapy.
Review date with the dentist.

The Role of the Dental Hygienist

First phase of treatment

In the initial "oral hygiene" phase of treatment, the dental hygienist:

- Educates the patient as to the cause of disease and its management, and

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发生有效的转变。

- 协助患者处理疾病相关因素，如菌斑控制，并劝告其戒烟（见第5章）。
- 通过记录出血指数及菌斑指数对病情进行监控。提供合适的针对患者本人的口腔健康建议，鼓励有效地控制菌斑。
- 仔细地去除龈上及龈下牙石，通过根面平整去除感染及坏死的牙骨质。后者需要充分的时间及使用恰当的龈下刮治器械（见本系列丛书第3本——成功的牙周治疗：非手术治疗方法）。

在完成上述基础治疗后，建议6～12周后再进行牙周探查及其他治疗，以利于：

- 边缘龈组织炎症的消退。
- 牙龈组织退缩，从而降低牙周袋的深度。
- 牙龈袖口内结缔组织的重建（袖口变紧）。

motivates the patient to bring about effective changes.

- Assists the patient in managing the cause-related aspect of their care, e.g. plaque control and smoking cessation counselling (Chapter 5).
- Monitors the response to therapy by recording the plaque and bleeding scores and offers appropriate individual oral hygiene advice and encouragement to maintain effective plaque control.
- Meticulously removes supra- and subgingival deposits and performs subgingival debridement to remove infected and necrotic cementum. The latter is a demanding clinical task that requires adequate time-allocation and use of appropriate subgingival instruments (see third book of the present series – *Successful Periodontal Therapy: A Non-Surgical Approach*).

On completion of this initial hygiene phase it is recommended to delay periodontal probing and future therapy for a period of 6 to 12 weeks to allow:

- resolution of inflammation within the marginal tissues
- recession and hence reduction in probing pocket depths
- remodelling of connective tissues within the gingival cuff (tightening of cuff)

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• 非病理性龈下菌群的重建。

同时也便于评估：
• 菌斑控制情况。
• 戒烟对疗效的影响。

从基础治疗阶段过渡到纠正治疗阶段的决定取决于操作者个人的经验。在形成这种决定时，开业医师应考虑一起工作的临床技师的技能及经验。

技能的培训及设备的投资对治疗的成功十分重要（见第4章）。开业医师作为经营者有责任鼓励并确保牙科临床技师参加一些能亲自动手的课程学习，并为临床操作提供合适的器械。

牙科医师的复查

牙科医师的复查可确定患者菌斑控制及戒烟情况；哪些牙位是牙周炎"活动"位点，是否存在菌斑滞留因素，这些情况可记录在该治疗阶段。开业医师对治疗计划进行修改的证据来源于临床检查表、临床记录及X线片。"基于个人"、"基于牙齿"、"基于位点"危险评估的相关内容见本系列丛书第一本。

• re-establishment of a non-pathogenic subgingival microflora.

And to assess:
• plaque control compliance
• response to smoking cessation advice, if appropriate.

The protocol for the transition from the initial phase to the corrective phase of therapy will depend upon the individual practice. In formulating this protocol, the practitioner needs to consider the skill and experience of the hygienist with whom they are working.

Investment in skills development and equipment is essential for success (Chapter 4). The practitioner has an obligation as an employer in this regard to ensure that the hygienist is encouraged to attend appropriate hands-on courses, and to provide the necessary equipment in the practice.

Review with the dentist

A review with the prescribing dentist will determine the extent of the patient's compliance with plaque control and smoking cessation; where "active" periodontal sites are located; and whether there are any plaque retention factors that could be addressed at this stage of therapy. The evidence that will guide the practitioner to form a revised treatment plan may be obtained from the monitoring charts, the clinical notes and the radiographs. The "sub-

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有特殊意义的内容包括：

- 与患者病史有关的所有变化。
- 全口探诊出血指数及菌斑指数（图3-9）。
- 基础治疗阶段完成后详细的牙周袋检查表，并与基线时牙周袋检查表相比较（图3-10）。
- 患者就诊记录。
- 吸烟习惯记录（如果有需要）。
- 任何不良充填体。

通过检查，开业医师可决定在该阶段哪些菌斑滞留相关因素应该去除，以减少菌斑，从而促进组织修复。不良充填体及修复体悬突（图3-11）需要被更新，不良的全冠可被经实验室设计与龈边缘相适应，且具有一定外形突度的全冠所取代。对于其他可引起牙周病复发的相关因素诸如系带附着过高、牙列拥挤及义齿修复等黏膜因素可在牙周组织状态稳定后再进行处理。

ject-based", "tooth-based", and "site-based" risk assessments are outlined in the first book of this series.

Of particular significance are:

- Any change in the patient's medical history.
- The full mouth bleeding and plaque scores (Fig 3-9).
- The detailed pocket chart at the end of the initial phase of therapy to be compared with the base line chart (Fig 3-10).
- Record of patient attendance.
- Record of smoking habits (if appropriate).
- Any defective restorations.

From this the practitioner can determine which plaque retention factors could be eliminated at this stage to enhance plaque removal and aid healing. Overhanging or defective restorations (Fig 3-11) could be renewed and defective crowns could be replaced with laboratory-constructed crowns with good marginal adaptation and emergence profiles. Decisions concerning other factors which may affect disease recurrence, for example mucosal factors such as a high fraenal attachment, overcrowding and denture replacement should be deferred until the periodontal tissues are stable.

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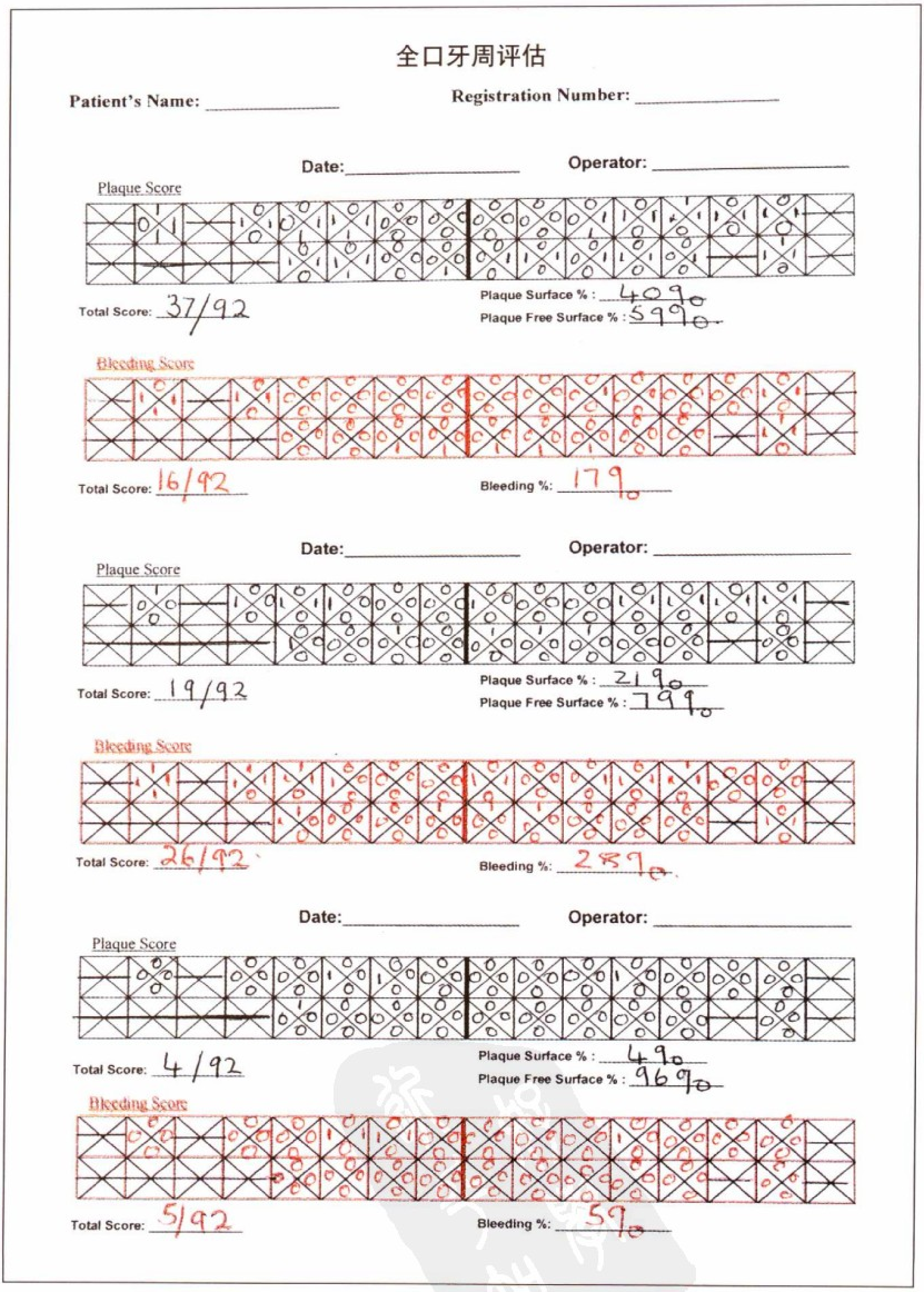


图 3-9 基础治疗后菌斑指数及出血指数检查表

Fig 3-9 Post-initial therapy plaque and bleeding chart

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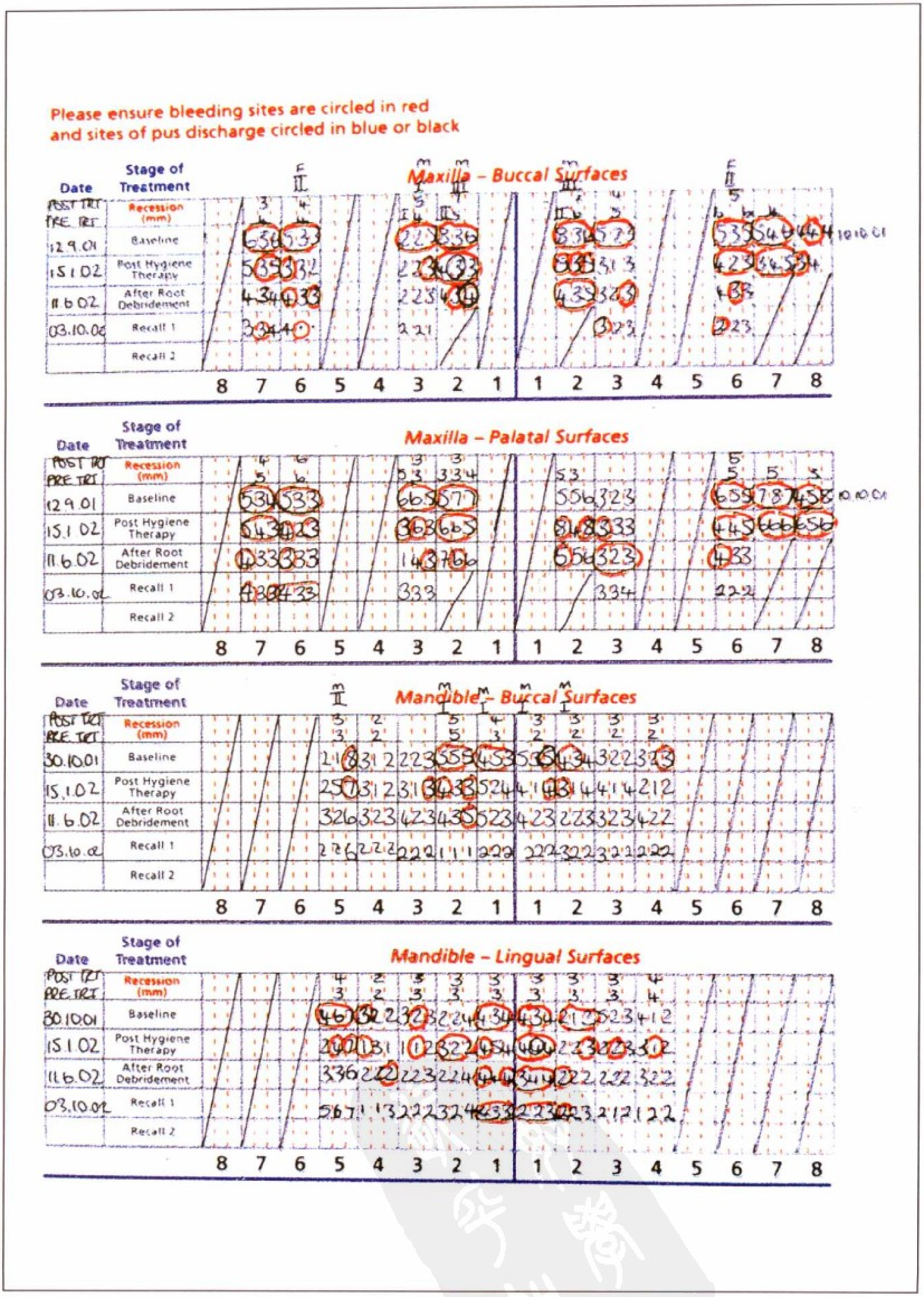


图 3-10 基础治疗结束后牙周袋检查表

Fig 3-10 A pocket chart on completion of the initial phase of therapy

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图 3-11 在基础治疗阶段应对有悬突的充填体进行重新充填，同时治疗继发龋

Fig 3-11 An overhanging restoration should be replaced at the completion of the initial phase of therapy and active caries removed during the initial phase

哪些牙位需要进行根面平整？

探诊深度超过5mm的牙周袋是疾病进一步发展的最大危险因素。这种牙周袋探诊常出血，而且出血来自牙周袋底，有时又称为“延迟性出血”。将这些牙周袋的深度值用红笔记录，以mm表示是很有用的。牙科临床技师可在局部麻醉下对这些位点进行根面平整。治疗后由牙医师进行复查，一般需要6~12周的时间保证组织的愈合。

Which sites require RSD?

The greatest risk of disease progression is in pockets with a probing depth ≥5 mm, which bleed on probing. This refers to bleeding from the base of the pocket, which is sometimes termed “delayed bleeding”. It is helpful if these pockets are identified on the chart by using red ink to record the depth in millimetres. These sites can be debrided by the dental hygienist under local analgesia, following which the patient should be reviewed by the dentist, allowing a minimum of 6–12 weeks for the healing process.

第二阶段治疗

牙科执业助理医师修订稿或牙科临床技师“第2阶段”治疗计划内容包括：

- 指出患者菌斑控制不足的地方，并辨认出存在危险因素的特殊部位如根面凹陷。
- 指出需要在局部麻醉下进行根

Second phase of treatment

The GDP's revised or “phase 2” treatment plan to the hygienist should:

- Indicate areas where plaque control is inadequate and identify any site-specific risk factors, e.g. root grooves.
- Prescribe sites which are to be root

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面平整的位点。

- 在完成根面平整治疗后要求患者2～3个月到牙科医师那里复查。

对治疗无反应的位点，经医师开处方后，可在局部进行根面平整时配合使用局部缓释抗菌剂。

debrided under local analgesia.

- Request a review appointment with the dentist 2–3 months after the final session of root debridement.

In non-responding sites the hygienist may, if prescribed, apply locally delivered antimicrobial agents as an adjunct to root surface debridement.

牙周支持治疗

牙科临床技师在牙周支持（或维护）治疗中同样发挥重要的作用。许多研究（如Axelsson和Lindhe 1981，Ramfjord等1982）显示：如果患者不经常复诊，治疗将失败。

Supportive Periodontal Therapy

The dental hygienist may also play a key role in supportive periodontal (or maintenance) therapy. Many studies (e.g. Axelsson and Lindhe 1981, Ramfjord, et al. 1982) have demonstrated that treatment will fail if the patient is not reviewed frequently.

牙周支持治疗何时开始？

牙周支持治疗开始于患者已掌握如何减少并控制菌斑水平达到一定的程度时，此时宿主并不产生临床炎症反应，且疾病不再进一步地发展。对严重的患者而言，维护期可能在做出初步诊断后18个月或2年才开始。有必要对牙科临床技师作进一步的要求，包括复诊次数的指导。复诊次数取决于：

- 宿主的反应（即个体对菌斑堆积程度的耐受值）。

When does supportive therapy start?

Supportive therapy starts when the patient has learnt to reduce and maintain plaque levels to an extent that the host response does not lead to clinical signs of inflammation and the disease is no longer active/progressive. In advanced cases maintenance may not begin until 18 months or two years have elapsed since initial diagnosis. A further prescription to the dental hygienist is required, including guidance on the frequency of recall visits. The frequency will depend on the:

- host response (i.e. the individual patient's threshold for plaque

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- 牙列及口腔肌群的复杂性。
- 患者手指的灵活性。
- 生活方式（工作变更，压力等）。

对硬组织疾病的监控是牙医师的责任。根面龋是牙周病治疗过程中常见的并发症（图 3-12），常仅靠 X 线检查才能发现。维护期也是讨论义齿修复及其他与牙龈退缩相关疾病治疗的全面护理计划开始的恰当时机。

病例讨论

团队应强调患者不同治疗阶段的内容均是病例讨论的结果。成功及不成功治疗结果的分享可成为临床回顾、教育及评估的基础。某种程度上也是对临床操作守则的复习。为了达到这一目的，应告知团队其他成员病例学习将在学习会议中进行。如果除了牙科医师外还邀请其他的员工参与轮流

accumulation)

- complexity of the dentition and oral musculature
- manual dexterity of the patient
- lifestyle factors (shift work, stress, etc.).

It is the dentist's responsibility to monitor diseases of the hard tissues. Root caries is a frequent sequela of managed periodontal diseases (Fig 3-12) and is often only detected radiographically. The commencement of the maintenance phase is also the appropriate time in the overall care plan to discuss tooth replacement and any concerns regarding recession.

Case Discussion

The team will strengthen as a result of case discussion throughout the various stages of treatment. Shared successful and unsuccessful outcomes can become the basis for peer review, education and clinical audit. This, in turn, may lead to a review of practice protocols. To formalise this process a case study presented at a practice



图 3-12 根面龋是牙周病治疗的常见并发症

Fig 3-12 Root caries is a frequent sequela of managed periodontitis

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主持病例讨论，则取决于其在团队中所处的情况。

meeting will inform other team members. If personnel other than the dentist are invited in rotation to lead the presentation it builds on the individual involvement within the team.

临床相关要点（图 3-13）

牙科医师的责任：

- 采用患者所能理解的术语解释疾病的诊断及预后。
- 进行详细的临床记录及X线阅片记录。
- 向患者解释牙科临床技师的作用。
- 向患者明确承诺治疗时间和费用。
- 与牙科临床技师进行良好的口头及书面交流。
- 安排患者定期复诊。

Key points of clinical relevance (Fig 3-13)

The dentist's responsibilities:

- To explane the diagnosis and prognosis in terms that the patient can understand.
- To maintain accurate written and radiographic records.
- To describe the role of the dental hygienist to the patient
- To make clear the time and financial commitment to the patient.
- To have good written and oral communication with the dental hygienist.
- To arrange regular review appointments.

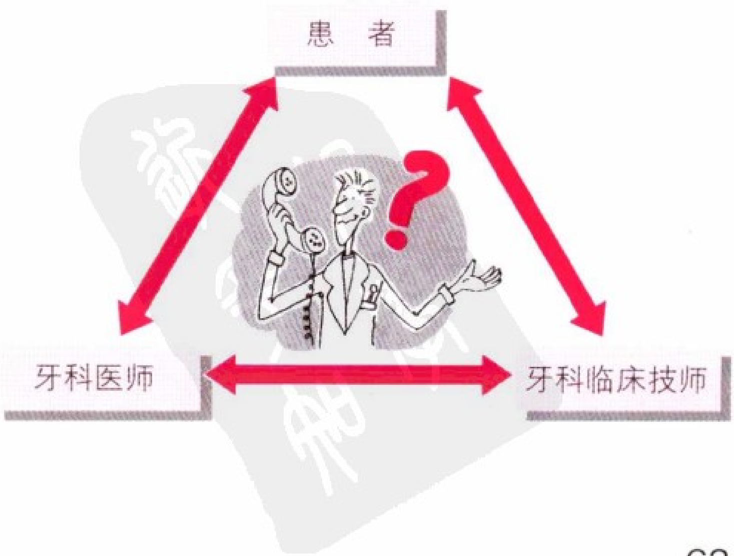


图 3-13 信息交流
Fig 3-13 Communication of the message

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牙科临床技师的责任：

- 教育、推动并向患者提供建议。
- 有效地去除牙面沉积物。
- 必要时与临床医师直接联系。

The hygienist's responsibilities:

- To educate, motivate and counsel the patient.
- Effectively to remove deposits.
- To liaise with the directing clinician when necessary.

拓展阅读

Further Reading

1 Axelsson P, Lindhe J. The significance of maintenance care in the treatment of periodontal disease. J Clin Periodontol 1981;8:281-295.

2 Chappie ILC, Gilbert AD. Understanding Periodontal Diseases: Assessment and Diagnostic Procedures in Practice. London: Quintessence, 2002.

3 Dental Defence Union. Claims Notified to the Dental Defence Union from UK GDP Members 2001-2002. London: MDU, 2002.

4 Dental Practice Board. Non-surgical periodontal NHS treatment to September 2002 in England and Wales over 18 and under 18 years, www.dpb.nhs.uk/ddonline/digest_result.cfm/.

5 Morgan RG. Quality evaluation of clinical records of a group of general dental practitioner entering a quality assurance programme. Br Dent J 2001;191:436-441.

6 Ramfjord SP, Morrison EC, Bergett FG, Nissle RR, Shick RA, Zann GJ, Knowles JW. Oral hygiene and maintenance of periodontal support. J Periodontol 1982;53:26-30.

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第 4 章 牙科临床技师诊室设备的选择

Selecting Surgery Equipment for the Dental Hygienist

目　的

本章的目的是重点介绍为提高牙科临床技师治疗牙周病的效率及疗效的特殊诊室要求。

Aim

The aim of this chapter is to highlight the specific surgery requirements for a dental hygienist to manage periodontal disease efficiently and effectively.

要　点

通过阅读本章，临床医师将获得一些相关信息，以便选择推荐给牙科临床技师治疗器械及设备。

Outcome

Having read this chapter, clinicians will have a source of reference for the selection of instruments and equipment recommended for the dental hygienist.

决策制定过程

在决定诊室所需的设备前，多方面的收集并获得信息是非常重要的（图 4-1）。

The Decision-Making Process

Before deciding on the requirements for a surgery, it is important to gather and collate information from various sources (Fig 4-1).

诊室的设计及装备

本书并非不愿意介绍口腔诊室所需的所有常规牙科设备，而是因为重点介绍牙科临床技师的特殊要求将更合适。这些要求有些与牙科医师的诊

The Surgery Layout and Equipment

It is not the remit of this book to include details of general dental equipment common to all surgeries, but rather to focus on the specific requirements of dental

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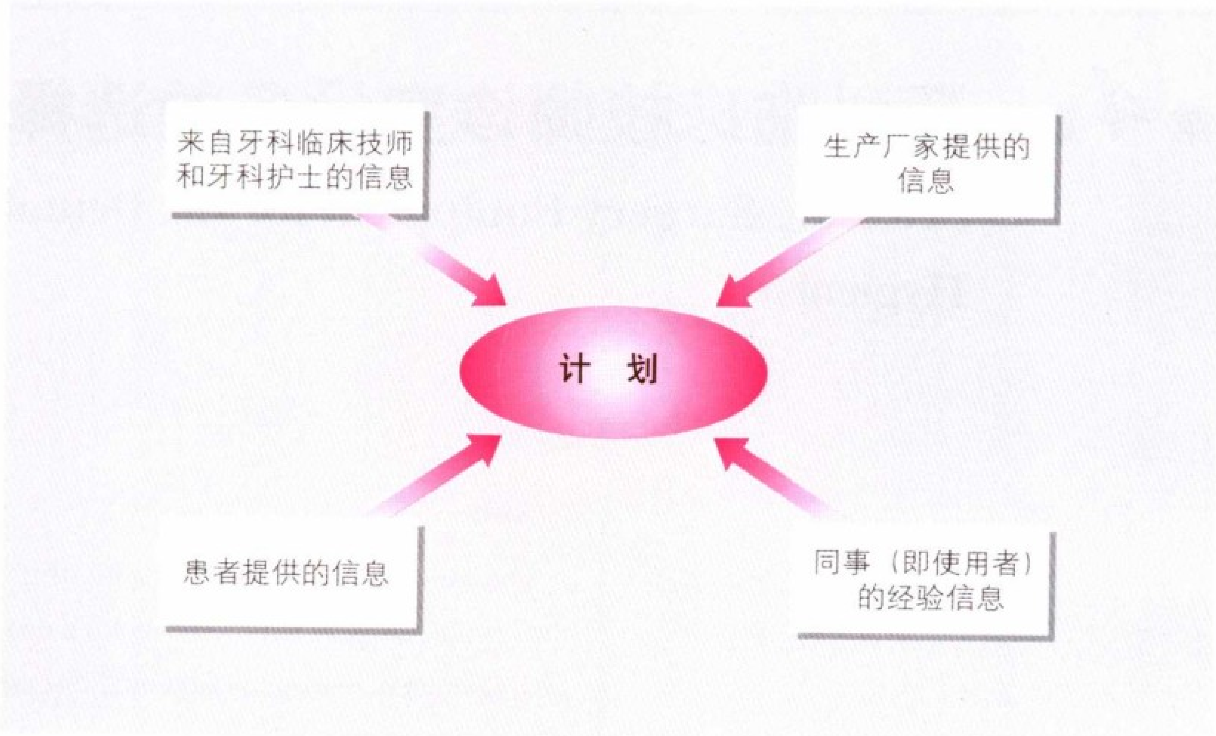


图 4-1 诊室设计相关信息的收集
Fig4-1 Collation of resources for surgery planning

室相类似，有一些则不一样。

牙科临床技师需要有同牙科医师一样的操作空间，诊室的设备及设计给患者的印象应与患者进入牙科医师诊室的印象相一致。由于牙周病患者可能经常到牙科临床技师那里，而非牙科医师处，因此营造一个舒适、宽松并较好的可控制交叉感染的就诊环境是十分重要的。如果牙科临床技师的诊室较小，配备的是"二手"设备，那么给患者的印象将如图中所描绘的一样（图 4-2）。

hygienists. Some of these may be similar to those of a dentist's surgery but other requirements differ.

The hygienist requires as much operative space as the dentist and the equipment and layout should give a similar impression to the patient to when they enter the dentist's surgery. Patients with periodontal disease are likely to visit the hygienist more often than the dentist. It is therefore important to create an environment of comfort and relaxation compatible with universal cross-infection control procedures. If the hygienist has "second-hand" equipment in a small room, it is worth reflecting on the image this may portray to the patient (Fig 4-2).

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图 4-2　“我希望你能喜欢这里”
Fig 4-2 “Welcome to the broom cupboard”

“欢迎到杂物间”

诊室设计的要点是符合人体工程学要求。牙科医师普遍患有肌肉与骨骼疾病，牙科临床技师也不例外。根据 MacDonald 及其同事的研究（1988）发现，29%的牙科临床技师患有腕管综合征（carpal tunnel syndrome）及其他与上部肢体有关的神经疾病。许多职业因素是导致该综合征的危险因素（条栏 4-1）。工作场所及设备的利用，器械的选择均是预防疼痛和身体虚弱（有时将导致提前退休）时所要重点考虑的。

A key priority in surgery planning is ergonomics. Dental clinicians suffer from occupational musculoskeletal problems and hygienists are no exception. According to MacDonald and colleagues (1988), approximately 29% of hygienists suffer from carpal tunnel syndrome and other associated upper body neuropathies. There are several risk factors contributing to the occupational component of this syndrome (Box 4-1). The utilisation of the working space, the equipment, and choice of the instruments are essential considerations in the preventive strategies for a condition which is painful and debilitating or may, in some cases, lead to forced early retirement.

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条栏 4-1

腕管综合征的主要危险因素

操作者的体位。
握持器械所需力量。
电线的机械压力。
超声洁牙机的振动。
诊室及洗手液体的温度。

姿　势

牙科临床技师的椅旁工作时间从8个小时到12个小时不等。对于右手操作者，在治疗下颌前牙、右下颌后牙、上颌前牙及右上颌后牙区时，常让患者处于半仰卧位，牙科临床技师可直接面对患者（图4-3）。这种体位使操作者能在直视下进行操作，保持后背的挺直，腕关节处于中性位。腕关节

Box 4-1

Major Risk Factors in Carpal Tunnel Syndrome

Operator position
Force needed to grasp instrument handles
Mechanical stress from power leads and cords
Vibration form ultrasonics
Temperature of surgery and hand washing water

Posture

Dental hygienists work from the 12 o'clock to the 8 o'clock chair positions. For a right-handed operator, treatment of the lower anterior, lower right posterior, upper anterior and upper right posterior sextants is frequently conducted with the patient semi-supine and the hygienist facing the patient (Fig 4-3). This positioning enables

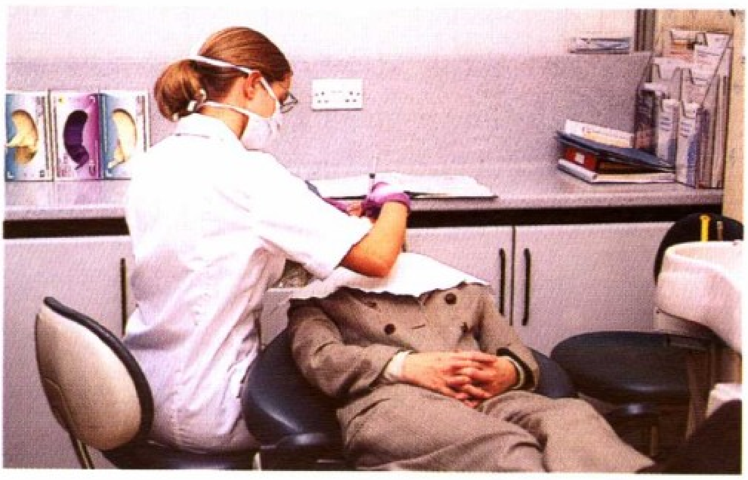


图4-3　患者及操作者的位置对保持较好的姿势十分重要

Fig 4-3　Positioning of both patient and operator is important in maintaining good posture

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弯曲可使腕管的压缩增加达200%。必须有足够的空间让操作者在牙科治疗椅及固定的橱柜间调整座椅，以获得最合适的体位。

the operator to work by direct vision and to keep the lower back upright and the wrist in the neutral position. Wrist flexion increases compression in the carpal tunnel by 200%. In order to achieve the optimal position there must be sufficient space for the operator's chair to be manoeuvred between the dental chair and the fixed cabinetry.

力　量

与手机柄相连的卷曲电绳将给腕关节施加额外的力量。这样的设计应当最好避免，但如果已经配备这样的手机柄，牙科临床技师可通过身体对卷曲电线的支持而减少其力量（图 4-4）。

同样，刮治时，对手工器械的握持及施加的力量均会导致综合征的产生。可采用人体工程学设计，在重量较轻的器械表面覆盖上硅酮。细的六边形手柄使用时需要施加更大的力量使之在手指间移动（图 4-5、4-6），这也将产生机械性压力。20～80Hz 的振动会

Force

Handpieces attached to curled cords tend to exert greater force on the wrist. This design should preferably be avoided, but if they are already installed then the hygienist can support the cord to minimise the force (Fig 4-4).

Similarly, with hand instruments, grasping and forceful exertion during scaling may lead to symptoms. This can be avoided by using ergonomically designed, silicone covered lightweight instruments. Thin hexagonal shaped handles require more force and pushing to secure them in the fingers

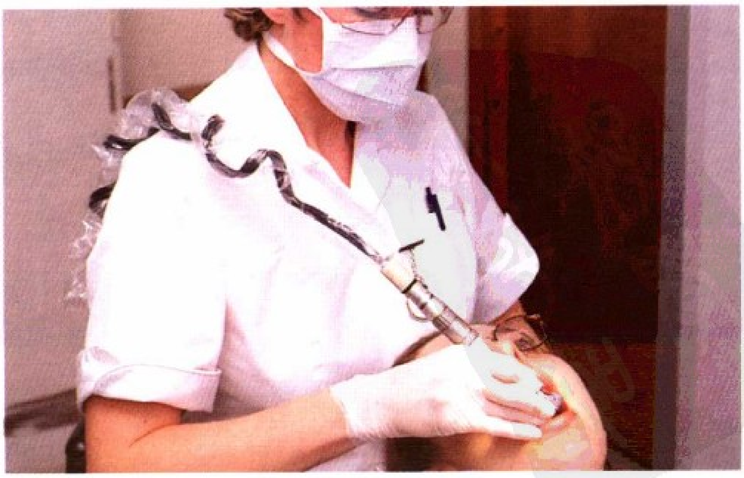


图4-4 对手机柄相连的卷曲电绳的支持将降低给腕关节施加的额外力量

Fig 4-4 Support of the hand piece cord reduces force on the wrist

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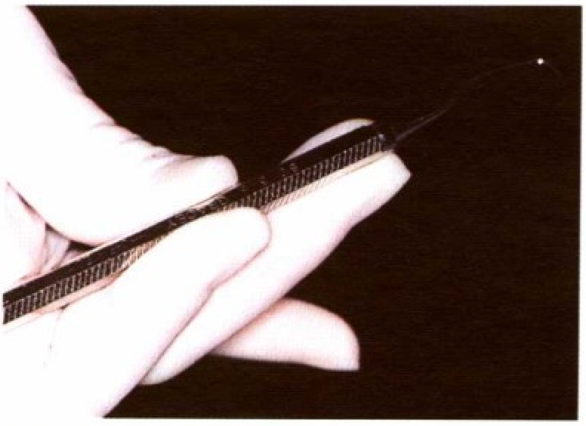


图4-5 六边形手柄需捏紧，以保证良好的握持

Fig 4-5 Hexagonal shaped handles are pinched to ensure a sound grip

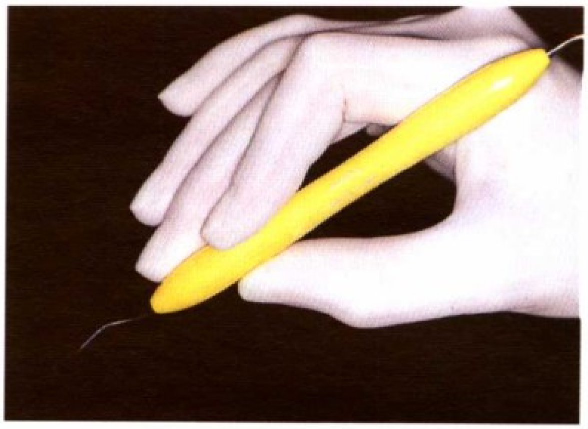


图4-6 人体工程学原理设计的硅树脂手柄可轻松握持

Fig 4-6 An ergonomically designed silicone handle is held lightly

对小血管产生损害。尽管，超声波洁牙机是牙科临床技师所配备的重要设备，但最好不要连续使用，而应通过预约将患者分开进行。

(Figs 4-5 and 4-6). This also contributes to mechanical stress. Vibration damage to the small blood vessels occurs at 20–80Hz. Whilst the ultrasonic sealer is an essential part of the hygienist's equipment, it is useful to plan appointments so that its use is not continuous.

温　度

低温将减少血液的流动，加速对神经末梢的压迫症状。诊室周围的温度应在25℃左右。

Temperature

Low temperature constricts the blood flow and accentuates the symptoms of nerve-end compression. The ambient temperature should be around 25℃.

X线照相设备

接受过IR（ME）R2000常规培训的牙科临床技师允许为由牙科医师开具处方的患者拍摄X线照片。如果X线照相设备安装在其诊室内或在专门的X线拍片室，可充分发挥牙科临床技师

Radiographic Equipment

Dental hygienists who have undertaken the IR(ME)R2000 regulations training are permitted to take radiographs prescribed by the dentist. If x-ray equipment is installed in their surgery, or at a designated x-ray

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的拍片技能。但是，如果照相设备仅仅安装在牙科医师的诊室，牙科临床技师则不太可能被叫到医师的诊室来拍片，因为要占用宝贵的临床时间。这将导致牙科临床技师拍片技能的下降，对拍片失去信心。

workstation, this will enable dental hygienists optimally to utilise their skills. However, if the equipment is solely in the dentist's surgery, they are less likely to be called upon to take radiographs because of the economic use of surgery time. This will lead to the hygienist becoming de-skilled and loosing confidence in taking radiographs.

对患者进行健康教育的设备

如第3章所描写，牙科临床技师重要的工作内容之一是告之患者口腔疾病的本质。这种教育可以个性化，通过使用口内照相及相差显微镜，牙科临床技师可以向患者展示放大1000倍的菌斑微生物（图 4-7）。这是一个非常好的方法，可对复诊时菌斑控制情况进行比较。

Equipment for Patient Education

As discussed in Chapter 3, the dental hygienist has a vital role to play in informing the patient about the nature of the disease in their mouth. The education may be personalised by the use of intraoral cameras and phase-contrast microscopy which allows the hygienist to demonstrate plaque organisms magnified × 1000 (Fig 4-7). This is an excellent motivating tool as comparative samples can be taken at subsequent appointments to review plaque control.



图 4-7　相差显微镜显示的菌斑形态（× 1 000）

Fig 4-7　Phase-contrast microscopy to demonstrate plaque morphotypes (× 1 000)

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刮治及根面平整设备

安全高效的临床器械及装置见图4-8。

临床初筛

WHO探针（图4-9）对于牙周基本情况的初步检查非常重要。其圆形末端同样适合做探诊出血的检查。

临床监测

牙周探针通常有15mm的刻度值，对于测量探诊牙周袋深度具有重要的作用（图4-10）。

该探针也可用来测量牙龈退缩的情况，其可真实地反映附着丧失的情况。WHO探针不能用于治疗的长期评估，其刻度仅能区别中、重度疾病，测量值只是“估计值”。菌斑的存在只能通过菌斑染色来显示。

洁　治

牙根面菌斑及牙石的刮除需下述设备：

Equipment for Scaling and Root Debridement

The reader is referred to Fig 4-8 for the equipment and instruments recommended for safe, effective clinical practice.

Screening

The WHO probe (Fig 4-9) is essential for Basic Periodontal Examination screening. Its ball end is also suitable for establishing bleeding on probing.

Monitoring

The periodontal measuring probe, usually with graduations up to 15 mm, is essential for measuring probing pocket depths (Fig 4-10).

It may also be used for measuring recession thus providing an indication of true attachment loss. The WHO probe cannot be used for longitudinal assessment as the bands representing the codes merely distinguish between moderate and advanced disease. “Measuring” becomes a “guesstimate”. Disclosing dye is necessary for recording the presence of plaque.

Scaling

The removal of plaque and calculus from the root surface requires the following:

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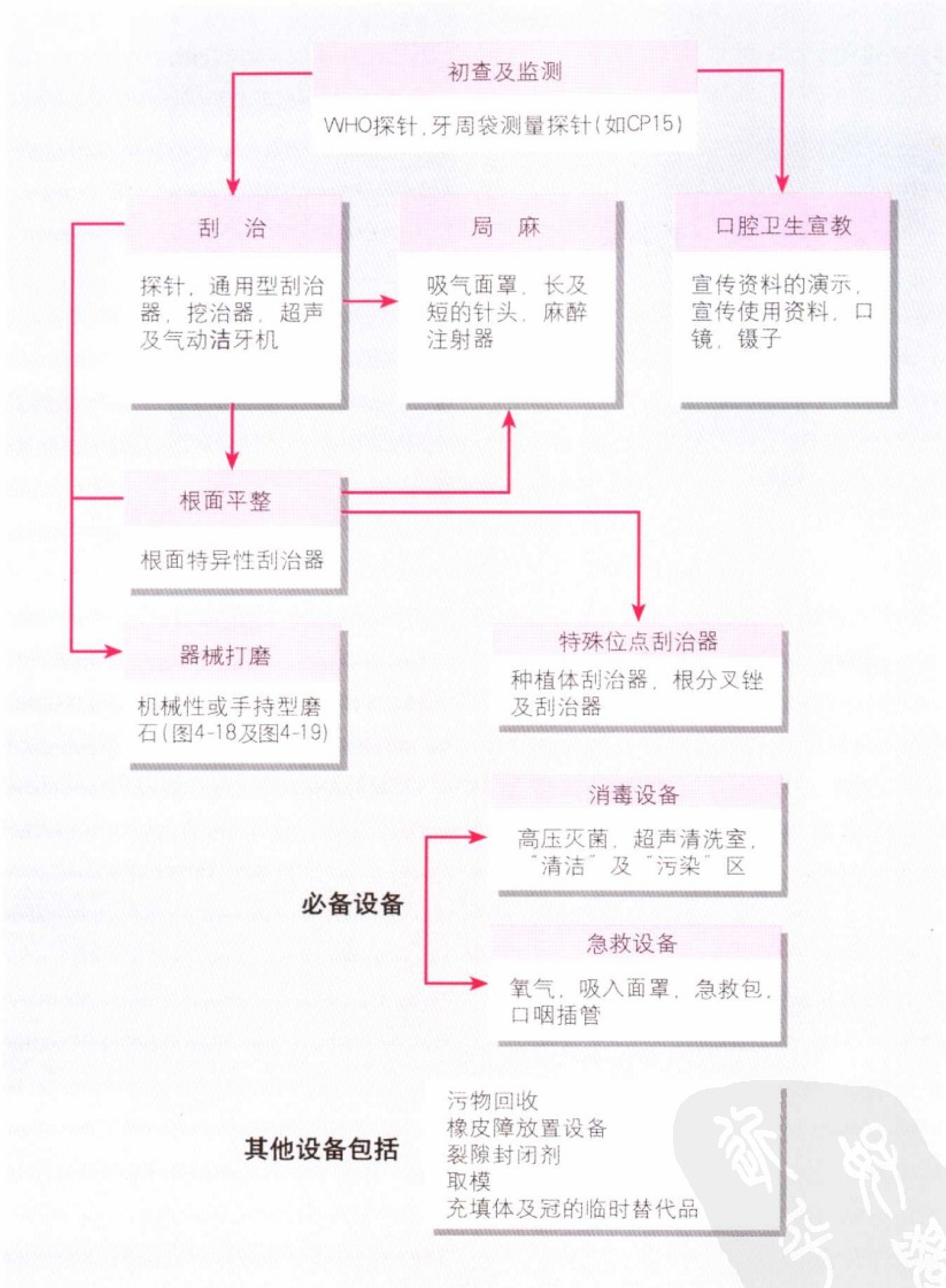


图 4-8 牙科临床技师诊室所需的特殊设备

Fig 4-8 Specific equipment for the dental hygienist's surgery

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图 4-9 WHO 探针

Fig 4-9 WHO probe

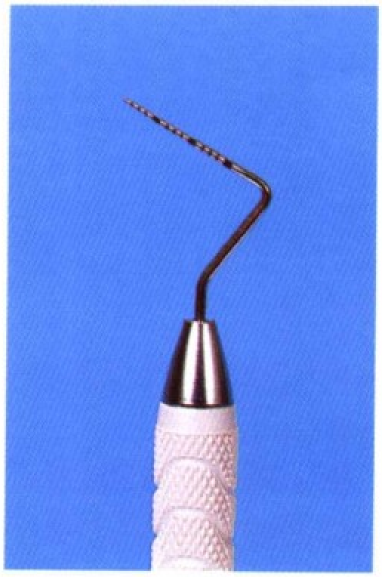


图 4-10 牙周测量探针

Fig 4-10 Periodontal measuring probe

1. 机械性洁治器。

超声磁力控制洁治器

其工作频率为20～40kHz，通过机械性切削、气穴作用、声波的微流作用进行工作。Schrocdar 真空管是器械安装时所必备的。Chapple等（1992，1995）研究显示半功率模式的工作效率与全功率模式的疗效是一样的，引起根面损伤的可能性却更小，使用洗必泰进行冲洗并不能获得更好的疗效（与水相比）。对装有起搏器的老年患者进行操作时应小心。压电效应超声洁牙机是超声刮治器的替代品。其工作原理是手柄内的石英晶体在受到交替变换的电压作用时发生变形，这种变形可驱动工作端的振动。

1. Mechanical scalers

Ultrasonic magnetostrictive scalers

These operate at 20–40 KHz and work by mechanical chipping, cavita-tion and acoustic microstreaming. Schroedar valves are necessary for installation. Studies by Chappie *et al*. (1992, 1995) demonstrated that the half-power mode was as effective as the full-power mode and less likely to cause root surface damage, and that there was no efficacy gain (over water) by using chlorhexidine, for irrigation. Caution is necessary with patients who have the older types of pacemaker fitted. Piezo-electric sealers are an alternative ultrasonic sealer. The mode of action is via a quartz crystal in the hand piece which deforms when subjected to alternating voltages. The deformation drives the tip oscillation.

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声波洁治器

其工作频率小于20kHz，通过治疗椅的压缩空气进行驱动（图4-11）。当工作端与牙面接触时其振动将减少，可用于装有起搏器的老年患者。

2. 强吸。

3. 护士的协助。

4. 手用器械。

– 两边均为工作端的通用型刮治器，对刮除大块的龈下牙石十分有效。

– 刮除龈上牙石的镰形刮治器。

– 挖治器。

5. 手柄、橡皮杯、抛光尖及抛光刷。螺旋式推进与紧密接触相比更受推崇，这是由于预防性抛光膏会增加牙面的磨损及产生划痕。

Sonic scalers

These operate at <20 KHz and are driven by compressed air from the dental unit (Fig 4-11). They are damped down by contact of the tip with the tooth, but they can be used on patients with older pacemakers.

2. High volume aspiration

3. Nursing assistance

4. Hand instruments

- universal curettes which cut on both sides of the tip and are useful for heavy deposits of subgingival calculus

- sickle scalers for supragingival deposits

- excavators

5. Hand pieces, rubber cups, points and brushes. The screw insertion is recommended rather than the latch grip attachments. This is because the prophylaxis paste will encourage wear and tear of the bearings.

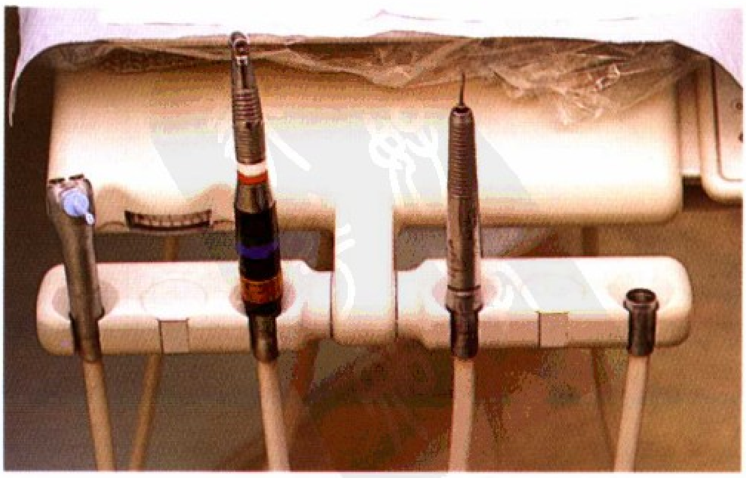


图 4-11　声波洁治器

Fig 4-11　A sonic scaler

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根面平整

根面平整要求对牙面进行充分的刮治，除去感染内毒素的牙骨质。牙科临床技师不能在直视下进行该操作。由于操作困难，要求对龈下牙石仔细辨认，小心清除。仔细的操作也可避免牙根面及软组织的损伤。为了获得好的治疗效果，必须清除表面感染脂多糖（内毒素）的牙骨质（10%～15%）。合适的器械包括：

1．ODU（Old Dominican University）探针，在进行根面平整前使用该探针可探查龈下牙石的位置，还可用来确定牙石是否被清除。该探针具有一定柔韧性的长杆，仅需较小的压力进行探查，在探查根面牙石方面优于WHO探针（图4-12）。

2．弯的根分叉探针。

3．用于根面平整的超声及声波刮治头，该刮治头具有长的末端，可达到牙周袋底。超声刮治头为细的线形工作头，并配有出水口（图4-13）。老式的工作头为外接水管喷水，由于外接水管的阻碍，该工作头不能伸入≥7mm的牙周袋内（图4-14）。

Root surface debridement

Root surface debridement requires thorough instrumentation of the root surface and removal of endotoxin-associated cementum. The dental hygienist will perform this as a closed procedure. It is difficult to perform and requires careful identification of the deposits followed by meticulous removal. Careful technique will also avoid both root surface and soft tissue trauma. In order to aim for a favourable healing response, the lipopolysac-charide (endotoxin) associated with the surface (10–15%) of cementum must be removed. Appropriate instruments include:

1. The Old Dominican University (ODU) explorer. This is used prior to root debridement to detect subgingival deposits and afterwards to ensure deposits have been removed. It has a long flexible shank and requires a light pressure for tactile sensation. It is far superior to the WHO probe for detection of deposits (Fig 4-12).

2. Curved furcation probe

3. Ultrasonic and sonic sealer tips for root debridement. The tips with the longer terminal shanks are required to reach towards the base of the pockets. The ultrasonic scaler tips are available as slim line tips with a focused spray (Fig 4-13). There are older models available with an external water delivery but use is limited as entry to pock-

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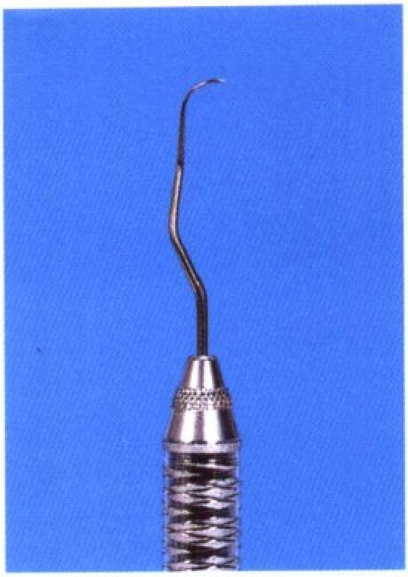


图 4-12　ODU 牙周探针（Hu Friedy，Chicago）
Fig 4-12 The ODU peri-odontal explorer (Hu Friedy, Chicago)

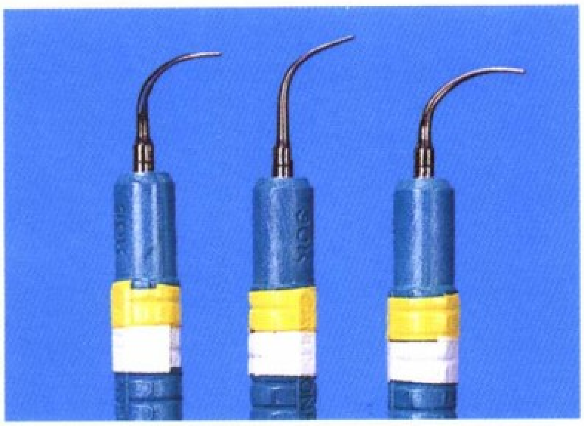


图 4-13　细的锥形头配有喷水孔（Densply，Weybridge，Surrey）
Fig 4-13 The slimline cavitron tips (Densply, Weybridge, Surrey) with focused spray



图 4-14　外接喷水器的锥形工作头，不可能深入≥ 7mm 的牙周袋
Fig 4-14 External water delivery Cavitron tips of limited use. Entry into pockets ≥7mm is impossible

4．手用器械——面特异性 Gracey 刮治器。现在有供根面平整使用的手用器械，这些器械的杆长而弯曲，刀刃与杆呈 70°。刀刃的外形与牙面一致，仅一边为工作端，因此具有面特异性。推荐给牙科使用的面特异性刮治器见

ets ≥ 7 mm is impossible due to obstruction by the water tube (Fig 4-14).

4. Hand instruments – Area-specific Gracey curettes. These are the hand instruments of choice for closed root debridement having long curved flexible shanks and blades at 70° . to the shank. The blades are contoured to the root surface and cut on one

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条栏 4-2 及图 4-15。锄刮具有较直的杆，仅有一点与牙根面接触。这种刮治器有些为碳化钨制成，因此不能在诊室内进行打磨。目前，大部分已被面特异性刮治器所取代。

side and therefore are used at specific sites only. A suggested range of site-specific curettes for the hygienist is given in Box 4-2 and Fig 4-15. Hoes have straight shank ends and one point tooth contact. Some have tungsten carbide cutting blades which means that they cannot be sharpened in the surgery. These have been largely superseded by area-specific curettes.

条栏 4-2

面特异性 Gracey 刮治器

1/2 刮治前牙所有牙面

7/8 刮治前磨牙颊舌侧牙面

9/10 刮治磨牙颊舌侧牙面

11/12 刮治后牙近中牙面

13/14 刮治后牙远中牙面

15/16 刮治后牙近中难以刮治的牙面

17/18 刮治后牙远中难以刮治的牙面

Box 4-2

Area-specific Gracey Curettes

1/2 All surfaces of anterior teeth

7/8 Facial and lingual surfaces of premolars

9/10 Facial and lingual surfaces of molars

11/12 Mesial surfaces of posterior teeth

13/14 Distal surfaces of posterior teeth

15/16 Mesial surfaces of posterior teeth of difficult access

17/18 Distal Surfaces of posterior teeth of difficult access

其他特殊位点使用的器械

这些器械包括：

- 刮治根分叉的镰形及锄形刮治器（图 4-16）。
- 迷你型面特异性刮治器。迷你型面特异性刮治器的刀刃是标准型的 50%，更适用于深袋。

Additional instruments for specific sites

These may include:

- Furcation files (Fig 4-16) and hoes.
- Mini area-specific curettes. These instruments have a blade diameter 50% of standard area-specific curettes and

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• 专门用于种植体的金或塑料刮治器（图 4-17）。

局部麻醉设备

• 吸气面罩。
• 长及短的针头。
• 麻醉注射器。
• 表面麻醉膏。
• 一个“专门”的储藏箱。
•独立的有害物废物箱（存放废弃麻醉药筒）。

琢磨设备

除了专门用于种植体的刮治器外，其他类型的刮治器均由马氏不锈钢制造。使用过程中，由于牙根面的硬度大

are useful in narrow deep pockets.

•Gold- or plastic-tipped scalers for implants (Fig 4-17).

Equipment for Local Anaesthesia

• Aspirating syringes.
• Long and short needles.
• Anaesthetic cartridges.
• Surface anaesthetic cream.
• A “sharps” bin.
• A separate cytotoxic waste bin (for anaesthetic cartridges).

Sharpening Equipment

Scaling instruments, apart from those specific for implants are manufactured from martensitic stainless steel. An instrument

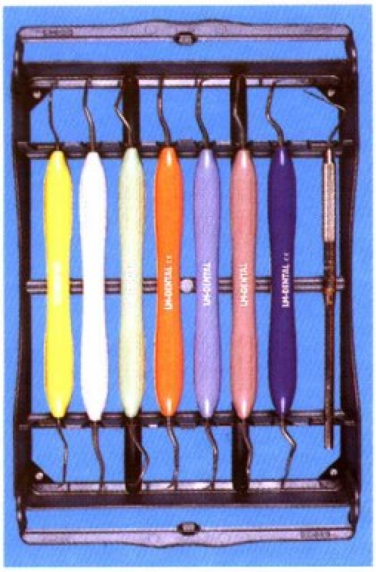


图 4-15　面特异性 Gracey 刮治器（LM　Dental，Finland）
Fig 4-15　Area-specific Gracey curettes (LM Dental, Finland)



图 4-16　根分叉锉
Fig 4-16　Furcation files

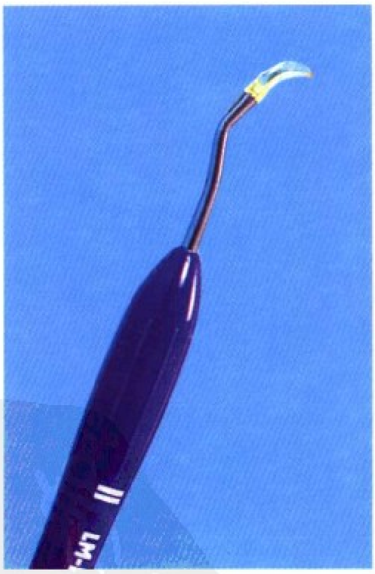


图4-17　种植体清洁专用刮治器
Fig 4-17　Scalers　for cleaning implants

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于器械金属本身，因此金属颗粒将会从器械表面脱落使器械弯钝。为了琢磨器械，磨石的硬度应大于不锈钢器械。器械需要琢磨的原因见条栏 4-3。

becomes dull during use because the tooth surface is harder than the metal of the instrument and particles are lost from the surface. To resharpen a scaling instrument, the material of the sharpening stone must be harder than the steel of the instrument. The reasons for sharpening scaling instruments are listed in Box 4-3.

条栏 4-3

洁治器械需要琢磨的原因

减少临床操作时间（需要刮治的次数减少）

提高对器械的控制（可到达更加精确）

减少软组织的损伤

减少操作者的疲劳

降低磨平牙石的可能性

增加手指触觉的敏感性（握持力量可较小）

琢磨的目的

产生锐利的边缘

保持器械的设计外形及刀刃形态（生产厂家建议当器械的刀刃外形减少 50%时，应更换器械）

琢磨所需设备

磨石（手持型或电动的）

放大镜

塑料检测棒

Box 4-3

Reasons for sharpening scaling instruments

Decrease in operator time (fewer strokes are required)

Increase in the cotitrol of the instrument (greater precision is possible)

Decrease in risk of soft tissue trauma

Decreased operator fatigue

Reduction in burnishing of the calculus

Improve tactile sensitivity (a light grasp is possible)

The goals of sharpening

To produce a sharp edge

To preserve the instrument design and conserve the blades (manufacturers recommend that instruments be replaced when the blade has been reduced by 50%).

The requisites for sharpening

A stone (hand held or power driven)

A magnifying loupe

A plastic test stick

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手持型磨石可为天然石材如阿肯色石或陶瓷材料（图 4-18）。琢磨时应了解器械的设计，掌握一定的技能，同时应耐心！电动磨石可高效、精确地琢磨器械（图 4-19）。但与手持型磨石相比，电动磨石具有两大缺点：器械需进行消毒，因此不能在治疗过程中使用；另外，价格昂贵。

The hand-held stone may be natural material such as Arkansas or a ceramic material (Fig 4-18). This method requires knowledge of the instrument design, skill and patience! Electronic sharpening stones are an efficient and accurate method of sharpening instruments (Fig 4-19). There are, however, two major disadvantages com-

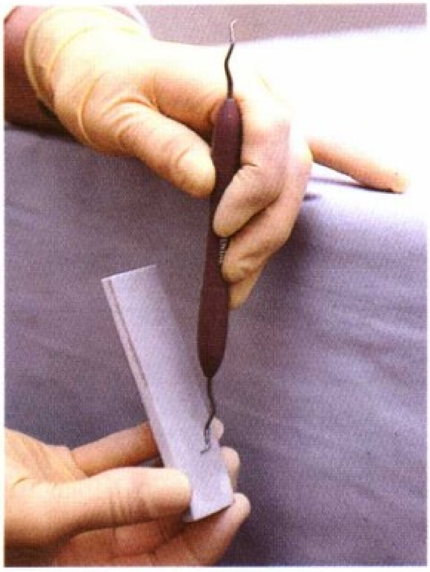


图 4-18　手持型磨石

Fig 4-18　A hand-held sharpening kit



图 4-19　电动磨石（LM Dental，Finland. ElRondo from JS Davis）

Fig 4-19　An electronic sharpening stone (LM Dental, Finland. El-Rondo from JS Davis)

表 4-1　机器琢磨

Table 4-1　Machine sharpening

优　点	缺　点
• 快速	• 只有经过消毒器械才能进行打磨，治疗过程中仍需手持型磨石进行打磨
• 简单使用	• 成本较高
• 根据器械的设计精确调整，保存刀刃形状	
• 治疗团队的成员均能使用该机器	

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pared to mechanical stones: the instruments must be sterile, therefore the machine cannot be used during an operative procedure; and they are expensive.

家　访

牙科临床技师需要不时地离开诊室，到患者的家里去家访。法律规定家访时必须有第三者在场。牙科护士是理想的人选，她在治疗过程中能为牙科临床技师提供建议及帮助。表4-2列举了牙科临床技师家访时所需设备及

Domiciliary Visits

From time to time hygienists are required to leave the surgery environment and visit patients in their own or residential homes. It is a legal requirement that a third person is present. The ideal person is the dental nurse who is able to assist and advise dur-

表 4-2　牙科临床技师家访所需设备

Table 4-2　Suggested kit for domiciliary visit by dental hygienist

必需品	便携设备	消毒器械	一次性用品	药品
胸卡	便携吸引器	检查盘（多备一份）	手套	漱口药片（mouthwash tablets）
面罩（并有备用品）	移动器械及手柄	抛光器械盒	口罩	凡士林
塑料工作裙	便携灯具	刮治器械盒	Dappens pots	牙膏
防护镜	专门的箱子		义齿罐	Duraphat™ 洞漆
纸和笔			杯子	防护膏
日程安排本			压舌板	洗必泰凝胶或漱口液
预约卡			纱布	牙刷
记录卡			棉卷／脱脂棉	邻间刷
NHS 表格			棉签	牙线
温度计（接触型）			纸巾	散装药片
手机			婴儿拭纸	表面消毒剂
手电筒			垃圾袋	
处方单				

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材料。这些设备及材料可放置于一个塑料工具盒内。另外，建议最好为家访的车辆买保险。

ing the treatment. A suggested list of equipment and materials for domiciliary visits is shown in Table 4-2. This equipment and materials can be packed in a plastic toolbox. In addition, the possession of car insurance for employment purposes is recommended.

牙科护士的协助

为牙科临床技师配备牙科护士是十分必要的，其理由如下：

- 控制交叉感染。
- 为第三者在场提供记录证明。
- 吸引——减少超声及气动洁牙机产生的水雾。
- 伴护。
- 四手操作——使患者更舒适安全，帮助吸引，窝沟封闭，局麻，药物急救。
- 节约时间——在器械消毒时，对患者进行引导，以及进行洗片工作。

有了护士的帮助，牙科临床技师可提高其工作效率，减少失误。

当牙科临床技师单独对患者进行治疗时，另外一个具有相应资格的个体的在场是十分重要的——他们通常为具有相应资格的牙科护士。

Dental Nursing Support

It is desirable to provide designated nursing support to the dental hygienist for the following reasons:

- Cross-infection control.
- Recording of indices into the clinical notes requires a third person.
- Aspiration – the ultrasonic and air scalers create hazardous aerosols.
- Chaperone.
- Four-handed support – for patient comfort and safety, aspiration, fissure-sealant application, local anaesthetic, medical emergency.
- Economy of time–during sterilisation, patient transference and development of radiographs.

With nursing support the dental hygienist will work more efficiently and reduce problems induced by poor posture.

When only the dental hygienist and patient are on the premises, it is essential that a second suitably qualified individual is present when the dental hygienist provides treatment. Usually this will be a qualified dental nurse.

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临床相关要点

- 为了使牙科临床技师能充分利用并发挥其工作技能，牙科临床技师需充分配备高效的设备及合适的材料。
- 牙科临床技师的设备，诊室设计及装修均应与牙科医师的诊室一样实行高标准。
- 交叉感染的控制。医师健康及工作安全是诊室设计时应优先考虑的。
- 牙科护士的协助是十分重要的。
- 应考虑到患者对诊室环境的感受。

Key Points of Clinical Relevance

- In order to utilise their full range of skills and to perform competently, the dental hygienist requires a comprehensive range of effective instruments and appropriate materials.
- The dental equipment and surgery design require the same high standards in planning and execution as that for the dentist's surgery.
- Cross-infection control and health and safety at work are top priorities in surgery design.
- Dental nursing support is essential.
- Consider the patients' impressions of all clinical environments.

拓展阅读
Further Reading

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第5章 口腔疾病预防Ⅰ：牙周疾病

Prevention of Oral Disease I: Periodontal Disease

目　的

本章的目的是指导牙周治疗团队促进患者对口腔卫生进行维护并戒烟。

Aim

This aim of this chapter is to guide the team through the promotion of effective oral hygiene and smoking cessation advice for the *individual* patient.

要　点

团队中的每个成员应了解口腔健康信息传递的有效方法。这些方法能够预防牙齿支持组织和口腔黏膜疾病的发生。

Outcome

The team members should have an understanding of the suggested methods of delivery of oral health messages to prevent diseases of the supporting tissues and the oral mucosa.

口腔卫生指导

成功的牙科全科医师都有一个预防牙周疾病的合作团队，对患者进行长期有效的教育是达到成功所必需的。

Oral Hygiene Instruction

Successful general dental practices have a co-ordinated team approach to the prevention of periodontal diseases. To achieve success consideration must be given to effective patient education and consistent long-term patient motivation.

教　育

通过媒体传递给患者的口腔健康信息越多，那么产生积极效应的可能

Education

The more often oral health messages are transmitted to the patient utilising differ-

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性就越大。首先，患者必须接受提供给他们的建议，这些建议视个人具体情况而定；同时患者应自我监督以取得满意的效果。从一开始患者就要意识到他们的牙齿支持组织受到疾病——即牙周病的困扰。牙周病是由菌斑引起并伴有宿主免疫反应的一种疾病，但是也有一些人并不会患牙周病。从牙科医师开始诊断起，就要进行口腔卫生宣教，并在牙科临床技师处再次强调。护理和接待人员需要加强对患者进行卫生宣教，特别是他们要负责任地进行劝告，并推荐购买一些口腔卫生用品。人们常常会遗忘一些健康信息，或者无法对健康信息进行区分。因此必须不断地对每个就诊的患者强化口腔卫生宣教，特别是对那些复诊的患者。

ent forms of media, the more likely a positive response. First, the patient must accept that the advice applies to them as an individual and then they must commit themselves to achieving positive outcomes. From the outset the patient must recognise that they have a disease of the supporting tissues of their teeth, induced by microbial plaque and modified by their host response, that many others do not have. The education process commences with the dentist at diagnosis and is reinforced by the hygienist. It is strengthened by the nursing and reception staff, especially if they are responsible for advice on and selling of oral hygiene products. Human beings forget health messages, or do not identify with them. Reinforcement is therefore required at every visit and, in particular, at a recall appointment.

为了充分影响患者，工作人员需要不断地进行口腔卫生宣教。而要达到该目标，需要整个团队对该方面的策略进行充分地讨论，比如哪些口腔卫生用品可以买到，或者一同进行戒烟的宣传。

To be effective the patient requires consistent advice from the staff. In order to achieve this, practice policies should be discussed at team meetings. This may include a policy on which oral health products to offer for sale, or coordination of smoking cessation advice.

患者的意愿

根据“期望值”理论的激发作用，如果一位患者表现得很积极，他就会对结果进行评估，并期望能达到成功。影响患者评估值和期望值的因素是多

Motivation

According to the “expectancy value” theory of motivation, if a patient is to engage in an activity then they must value the outcome and expect success in achieving

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种多样的，而且这些影响因素产生的作用并不仅是简单的叠加，各种因素都应充分考虑。如果缺少这些评估值或者期望值，治疗中患者将缺乏主观能动性。当患者初次被诊断为牙周疾病时，期望值理论与患者对早期疾病状态的知晓程度密切相关。整个团队应在患者生活方式的改变以及在这些改变之后的激励上扮演着关键的角色。

it. The impact of value and expectancy is multiplied. It is not simply additive; both factors need to be present. If either value or expectancy is absent then the motivated activity will not occur. The expectancy value theory is particularly relevant in the early stages of learning, i.e. when a patient first learns of the diagnosis of periodontal disease. The entire team has a key role to play in the value of addressing lifestyle changes and encouraging positive outcomes when these changes are acted upon.

诊疗过程的相关产品

与合作者约定，定期对相关产品更新换代，并且与执业医师商议，尊重他们一些特殊的要求，这些都是很明智的做法。对开业医师中的专科医师而言，诊疗过程中的相关产品还应涉及种植体固定修复装置的维护器械。在一些独立的随机的临床试验中采用化学方法和牙膏对菌斑进行控制已经被证明有效。典型的有代表性的病例会有说服力，但还是要准备证据以备患者咨询。推荐的口腔护理产品应该具备下列特点：

- 个性化。
- 易于获得。
- 有效。
- 性价比高。

Products in Practice

It is advisable to appoint a co-ordinator who regularly updates the products and consults with clinicians regarding specific requirements. In practices with an input from visiting specialists, the products may range from maintenance of implants to fixed orthodontic appliances. Chemical plaque control and dentifrices should also be available with the emphasis being on proven efficacy in independent randomised clinical trials. Representatives can be very persuasive, but must be able to provide evidence if requested to substantiate their claims. Recommended oral hygiene products should be:

- individualised
- readily available
- effective
- good value for money

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• 易于使用。

个性化的指导

口腔卫生指导要有个体差异。很显然，每位患者的口腔都是独一无二的，其形态、大小、牙齿情况和肌肉系统各不相同。此外，不同程度的真、假牙周袋、复杂的修复体、牙冠形态、敏感的吞咽反射、义齿，以及不同程度的宿主反应，再加上菌斑控制，情况十分复杂。

对于那些手脚不方便，或者与以前生活方式有冲突的患者，就需要一部分医生付出努力、时间和耐心来进行口腔卫生指导。一旦他们自身的口腔"卫生状况图"在患者脑海中留下印象，他们就会提高认识，增加就诊次数，并从基本的刷牙方法开始，进而进行牙齿邻面的清洁。

这种指导过程还应该包括纠正那些反复、无意识、无效的行为，对于某些病人而言，这些指导过程可能需要持续50年。这些不良习惯必须被新的口腔卫生保健方法所替代。这些方法起初还是一些有意识行为，到后来也就变成了一些无意识的自觉行为。一些老师使用的"能力形成阶梯"示例图如下（图5-1）：

确切的说，患有牙周病的患者均出现了针对细菌生物膜的异常宿主反

• easy to use.

Individual Instruction

Oral hygiene aids must be individualised. It may be stating the obvious but each patient's mouth is unique - in shape, size, dentition and musculature. Add to this the varying degrees of true and false pocketing, complex restorations, crowding of teeth, a hypersensitive gag reflex, dentures, and very different host responses, and plaque control becomes extremely complex!

Instructions to the patient, who may not be manually dextrous, or who has conflicting priorities in life, require effort, time and patience on the part of the clinician. They involve reinforcement over several visits, beginning with basic tooth brushing technique and progressing onto interdental cleaning once the mouth "map" has been imprinted in the patient's thinking.

The process includes breaking the cycle of unconscious actions carried out ineffectively. For some patients these processes may have been in place for over 50 years. These have to be replaced with new techniques, which at first will be consciously undertaken but later will become unconscious activities again. The "ladder of competence" paradigm used by teachers is relevant here (Fig 5-1).

Patients with periodontal disease have by definition an inappropriate host response to

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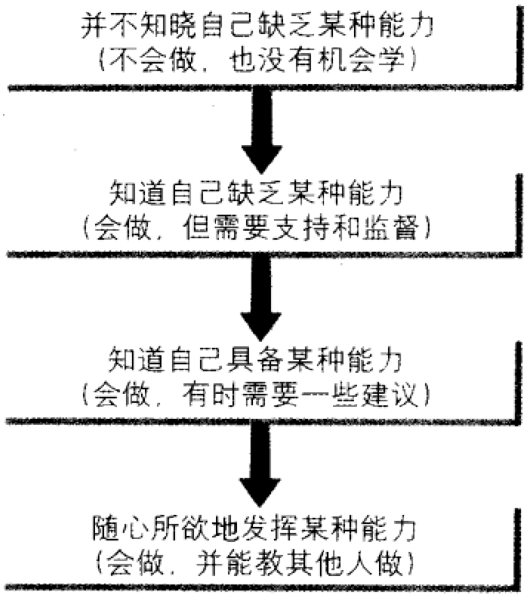


图 5-1　能力形成阶梯
Fig 5-1　Ladder of competence

应。为了保持健康，他们必须高效地控制菌斑。此外，菌斑控制没有时间限制，人一生中每一天都必须控制菌斑！

因此菌斑控制的示范需要一对一的进行。菌斑控制的方法由医师示范，法律允许这些医师将手放入患者的口腔内，同时他们也能深入地了解患者的口腔疾病状态、治疗情况以及引起菌斑滞留的因素。患者并非一定都要在牙椅旁接受教育，但椅旁教育效果相对较好。

牙椅可灵活调节，并有一个头靠，

the microbial biofilm. In order to maintain health, they have to be highly efficient at plaque control. Furthermore, this exercise has no definitive time frame; it requires daily commitment for life!

Demonstration of plaque control has therefore to be on a one-to-one basis. It has to be given by a clinician who is legally permitted to place their hands inside a patient's mouth and who has an understanding of the patient's oral disease status, medical status and plaque retention factors. It does not necessarily have to be taught in the dental chair, but this is preferable for several reasons.

The chair is manoeuvrable and has a head

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这便于对一些不易到达的位点进行示范。另外光源可以对后牙区提供很好的照明。口镜和探针也有助于口腔卫生教育。牙椅还带有漱口痰盂。控制交叉感染应常抓不懈！

rest—this allows access to demonstrate difficult sites. There is a light source for good illumination of posterior sites. There will be a mouth mirror and a blunt probe available to aid education. There is a bowl for expectoration. Cross-infection control must be maintained.

成年人可能对口腔卫生示范感到难为情，特别是不得不在他人面前进行操作时。如果只有一间口腔预防诊室，那么为了尊重患者的隐私，比较明智的方法是每次只对一名成年人进行示范。另一方面，儿童很少患有复杂的口腔并发症，特别是只有乳牙的年幼者。通常情况下，只需要教会儿童如何刷牙，而且他们也十分乐意和他们的伙伴一起学习刷牙。经过培训的口腔健康教育者可以在一间口腔预防诊室内指导多名儿童学习刷牙。对于年龄较大的儿童，则应教会他们如何清洁牙齿邻面和固定保持器；等到成年以后，则应教会他们一些更加个性化的方法。

Adults tend to be embarrassed by a demonstration on oral hygiene and, in particular, by having to practise it in front of others. To respect privacy, if a preventive unit is to be used it is advisable only to have one adult at a time. Children, on the other hand, have fewer oral complications, particularly the younger age groups with only the primary dentition to maintain. They usually require toothbrush instruction only and enjoy the company of other children. They may be instructed in a preventive dental unit environment with a trained oral health educator. For older children requiring interdental cleaning instructions and maintenance of fixed appliances, the more personal approach for adults should be followed.

如何提供建议

人们在任何时候都能记住信息的七个要素（图 5-2）；如果信息中的一些要素是可视的，或者是能用语言表达的，那么人们所能记住的信息要素的总数就会增加。

如果患者仅仅依靠听觉接受健康

How to give the advice

Broadly speaking, people can retain about seven pieces of information at any one time (Fig 5-2). If some of this information is visual and some linguistic, the total increases.

If the patient hears the health message

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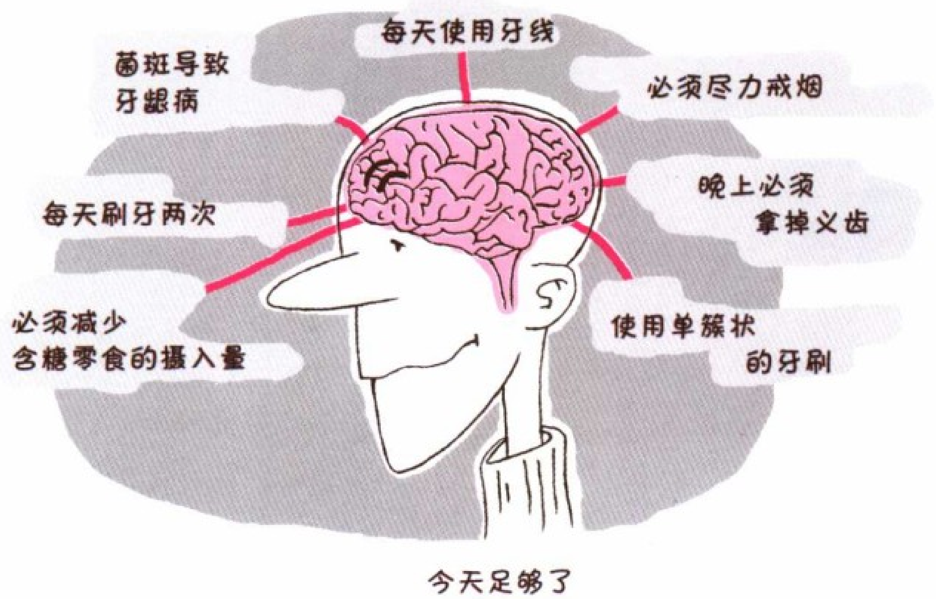


图 5-2　“我的脑袋快要爆炸了”
Fig 5-2 “My brain is about to burst”

信息，那么记住的信息量将只有20%。如果这些信息是靠视觉来获得的，则能记住 50%。如果指导者鼓励患者重述这些信息，信息的70%将被记住。最有效的记住健康信息的方法是让这些患者向指导者示范这些口腔卫生维护的技巧。

听过我就忘了。
说出来我就记得了。
行而知之（中国古代谚语）。

传递信息的方式也要充分考虑。宣教的目的是要让患者能够认识他或她自身口腔内一些情况（图 5-3）。为此，应该避免使用在塑料模具上示范刷牙的传统方法。刷牙示范时，患者所

only, 20% of the information will be retained. If they see the message in a visual form, 50% of the information is retained. If the instructor encourages the patient to speak back the message, then 70% of the information is retained. By far the most effective retention, however, is by the patient demonstrating the skill back to the instructor.

Hear it and I forget it
Speak it and I remember
Do it and I know, (ancient Chinese proverb)

The method for delivery of the message must also be considered. The aim is for the patient to identify the instructions with his or her own mouth (Fig 5-3). For this reason a traditional toothbrush demonstration

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图 5-3 个人问题的认识过程
Fig 5-3 Identification of the individual problems

看到的是塑料模具上的牙齿（完美的牙齿！）——这并不是他们自己的牙齿。如果医生让模具的下颌朝向与患者的下颌朝向一致，那么患者就不得不转动他们的头去看它。如果医生坐在患者的正对面，那么模型的方向就完全与患者的方向相反了。上颌牙齿的刷牙示范就更加困难了，因为患者对口腔的镜像并不熟悉。

建议患者带着他们自己的牙刷前来就诊（图 5-4），当患者使用的牙刷为电动牙刷时，这就显得更加重要，但要提醒患者记得充电。或者，牙医提供一把大小合适的手动牙刷给患者示范。在预约卡的背面应提醒患者，携带所有的口腔清洁用具将会非常有用。提供给每个新患者一个私人使用的所谓"启动包"，这是一个好的开始，这将鼓励患者使用定制的产品。只要患者能

on a plastic model is to be avoided. The patient sees a demonstration of a plastic model (with perfect teeth!) being brushed — not their own mouth. If the clinician orientates the model so that the lower arch is at the same orientation as the patient's lower arch then the patient has to crane their head to see it. If the clinician sits facing the patient and gains eye contact, the model is in reverse. Demonstration of the brushing of the maxillary teeth is especially difficult, as patients are not familiar with mirror images of the mouth.

The patient must be advised to bring his or her own toothbrush to the session (Fig 5-4). This is especially important if the patient uses a power brush, but they must be reminded to charge it! Alternatively, the practice may provide manual brushes of a suitable size for personal demonstration. A reminder on the reverse of the appointment card to bring in all oral cleaning devices will help. An option is to provide an indi-

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图5-4　我想我应该需要更小一些的！

Fig 5-4　"I was thinking of something a little smaller!"

够在医师面前试用牙刷和牙间带，牙医就可以给予建议和指导。不幸的是，许多手动的牙间刷无法通过零售方式获得，而不得不以邮购的方式获得，这就影响了部分患者的使用。而且定购和供货间的时间差将导致菌斑再次形成。如果这种方法（使用牙间刷）能有效地预防牙周疾病，诊所就应该备有这种牙刷以供患者购买。生产厂商们无法依据牙刷或者刷毛的直径来使刷柄的颜色标准化，这将导致患者在选择牙间隙刷时感到迷惑。将已经使用过的牙间清洁辅助用具准确地记录在病历内（如记录它们的品牌和刷柄的颜色）（图5-5），可为患者再次购买牙间清洁用具时提供信息帮助。

vidual starter pack to all new patients. It is a goodwill gesture, which will encourage the use of customised products. The patient is then able to try brushes or interdental tape with the clinician present, who can advise accordingly. Unfortunately, many of the hand held interdental brushes are not available for sale in retail outlets and have to be ordered by mail order. This involves effort on the part of the patient and a possible time lag between order and supply, which can lead to a relapse in plaque control. If the practice is seriously promoting prevention of periodontal disease, then the brushes need to be available for patients to purchase on site. The various manufacturers do not standardise the colour of the handles according to the brush or wire diameter and

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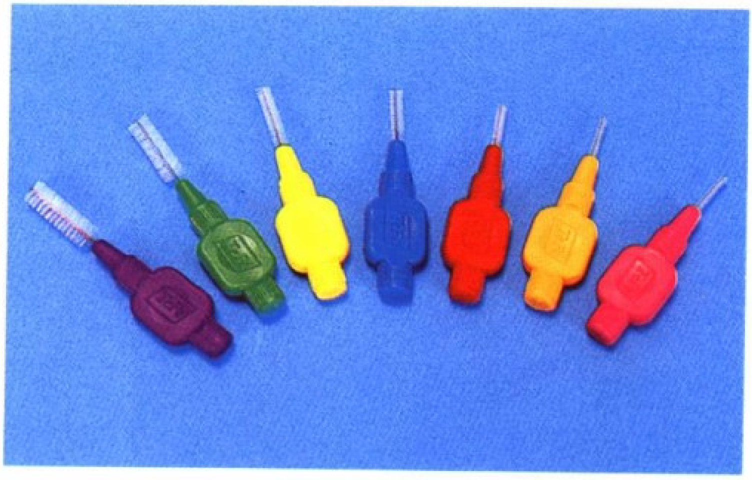


图5-5 一系列不同颜色的短手柄牙间刷

Fig 5-5 A range of short-handled colour-coded interdental brushes

如果患者认为这种产品的性价比高，例如能有效地控制菌斑并能"合理地"使用一段时间，那么患者就会继续购买这种产品。如果牙间刷比牙间隙大，牙间刷就会变形弯曲，患者使用时也会感到十分不便，随后也就不再使用它了。所以每次复诊都需要对牙间刷进行检查，以保证它与牙间隙始终适合（图5-6）。

随着牙龈的退缩，牙间隙将变大，相应的牙间刷也应该变大以便清除菌斑。根分叉区暴露时，使用合适的牙间刷也能进行清洁，但这依赖于根分叉病变的程度。

一旦手的灵活性提高了，就可以

this adds confusion to the choice. Communication is aided by recording in the records the precise interdental cleaning aid used, i.e. the brand name and the handle colour (Fig 5-5).

Patients will only continue to buy products if they perceive them to be good value for money i.e. effective for the purpose of plaque removal and lasting for a "reasonable" period of time. Interdental brushes buckle and bend if they are too large for the interdental space, at which point the patient may become despondent and discontinue use. At every visit the brushes need to be checked for a snug fit (Fig 5-6).

As gingival recession occurs the interdental spaces become larger and the brushes need to be correspondingly larger to remove the plaque. Furcation sites will also become visible and cleansable with the correct brush, depending on the degree of furcation involvement.

Once manual dexterity has improved, the

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开始教患者从腭侧和舌侧通道清洁牙间隙，如同他们从颊侧和唇侧进行的清洁一样（图5-7）。刚开始，患者可能需要一个长柄的牙间刷，随后，随着手灵活性的提高，使用短柄刷，也能够更好的控制菌斑。表5-1提供了一些牙间隙清洁工具的详细情况。使用这些工具的例子见图 5-8 至图 5-10。

patient can be taught to approach the spaces from the lingual and palatal aspect as well as the buccal/labial approach (Fig 5-7). Patients may need to start with interdental brushes on a long handle, but again, as manual dexterity improves, a short-handled brush offers better control. Some examples of interdental cleaning aids available are detailed in Table 5-1. Examples of these aids in use are shown in Figs 5-8 to 5-10.

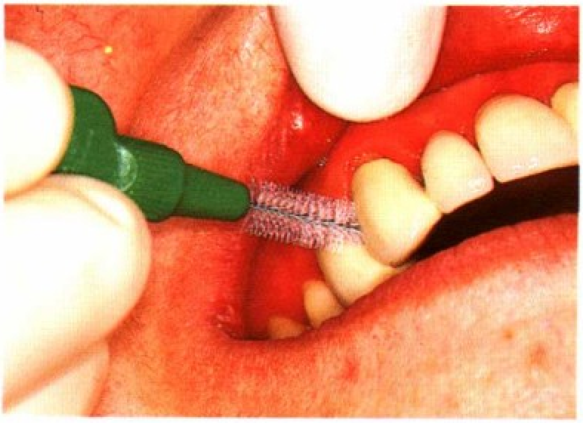


图 5-6 牙间刷必须适合牙间隙

Fig 5-6 The interdental brushes must fit snugly between the teeth



图 5-7 从腭侧通过牙间隙

Fig 5-7 Approaching the interdental space from the palatal aspect

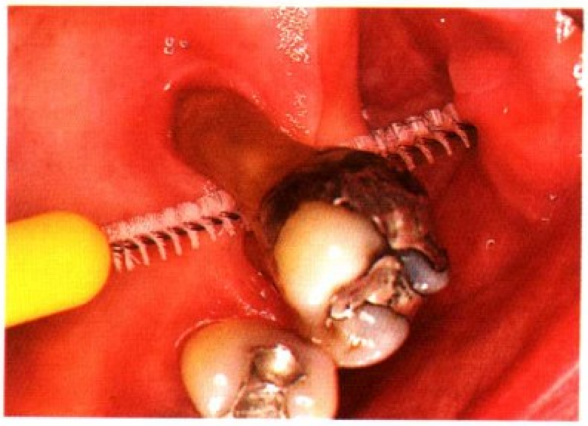


图 5-8 牙间刷清洁根分叉区

Fig 5-8 Furcation space cleaned by the interdental brush



图 5-9 使用超级牙线清洁桥体的牙龈面

Fig 5-9 The use of superfloss to clean under a bridge pontic

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图5-10 牙线夹(限用于接触紧的部位，效果不如牙间刷)
Fig 5-10 Flossettes (of limited use in tight contacts and less effective than interdental brushes)

表5-1 牙间隙清洁用品
Table 5-1 Interdental cleaning products

产品	提示和要求	注释
牙线和牙带	牙龈乳头存在较紧的牙间隙，对于手的灵活性要求较高	在牙龈退缩的初期使用
牙间刷	中度到重度的骨丧失，牙齿移动和松动；牙间隙大到能适合间隙刷以免其损伤软硬组织、根分叉区、天然牙的修复体、种植体（如义齿的桥体）	常见的损害是由于牙间刷强行进入牙间隙引起的。手灵活性差的患者使用带手柄的间隙刷。短柄型间隙刷有不同型号，以适合不同大小的牙间隙
超级牙线	环绕固定修复体，需要较高的技巧	要能够通过间隙
牙线夹	限于接触较紧情况下使用	使用受限，效果差于间隙刷
间隙刷	用于孤立的牙齿、部分萌出的牙、缺失牙的基牙	容易使用

何时进行菌斑控制？

一天24小时，只要患者有时间就应该进行菌斑控制。那些建议在不同的时间进行"社交性清洁"的做法也是正确的，但是每天至少应该进行一次彻底的菌斑控制。患者自己选择这个时间。如果患者清洁牙齿的时间被别

When should plaque control be carried out?

Whenever the patient has the time to commit to the regime in any 24-hour period. The advice "to socially clean" at other times is appropriate, but comprehensive plaque control must be conducted thoroughly at least once daily. The patient selects the spe-

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的事情占用了，这将导致菌斑清除不尽，牙周病就易复发。

cific period. Enforcement of a time when they have other commitments will lead to incomplete plaque removal and disease recurrence.

持续的教育

为了保持患者的依从性，医生需要在患者每次复诊时重复进行教育和激励，并对其清洁方式进行调整并加以鼓励。教育的内容还应包括向患者示范其口腔内一些疾病的表现以及软组织的细微变化。同时，在就诊开始阶段，利用图表和三维模型对疾病的原理进行解释是非常有效的，这有助于患者形成一些个性化的保健方法。一些患者有反复发作牙周脓肿的倾向（图 5-11），如果他们在严重疼痛和炎症发生前就能够认识炎症时牙周组织的变化，他们会更早地向牙科医师寻求帮助。

Continuation of the education process

To maintain patient compliance, education and motivation must be ongoing, requiring repetition at every visit, adaptation of the cleaning methods and encouragement. Part of the education process is the demonstration of signs of disease and subtle soft tissue changes in the patient's mouth. Whilst charts and 3-D models are useful at the outset to explain the principles of the disease, the patient is more likely to relate to a personalised approach. Some patients are prone to recurrent periodontal abscesses (Fig 5-11). If they can be taught to recognise the tissue changes early before pain and inflammation are severe, they can seek advice sooner rather than later.

应教会患者辨认菌斑，找到菌斑

Patients should be taught to disclose



图 5-11　轻微的炎症改变，可能预示着舌侧面牙周脓肿的发生

Fig 5-11　Subtle inflammatory changes which may herald the onset of a lateral periodontal abscess

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滞留部位，并将这些与炎症的表现联系起来。另外，牙科临床技师积极地监控菌斑和牙龈出血也是很有帮助的。还应教会患者闻牙间隙刷和牙线带出的菌斑的味道，进而检查是否有腐质存在（图5-12）。这是一种认识成熟菌斑的简便方法，而这些菌斑原本应该经常被清除掉。

还应该提醒患者注意那些"难以清洁"的区域，并教会患者如何清洁这些部位。如果临床医生发现有些部位器械难以进入，而患者也很难保持这些部位的口腔卫生，作为一名临床医生，您如果能停下治疗并分析一下您自己是如何克服这些问题的，并将这

plaque to see where the retention areas are, and if necessary to relate them to signs of inflammation. An active involvement in monitoring the plaque and bleeding scores with the dental hygienist will aid motivation. They can also be taught to smell the plaque retrieved from interdental areas on the interdental brushes and tape and therefore detect putrefaction (Fig 5-12). This can simply be related to the presence of mature microbial plaque that should have been removed more frequently!

Patients also need to be aware of the "difficult to reach" areas and taught how to access them. If the clinician finds an area difficult to instrument, then the patient will find that area difficult to maintain. It is worthwhile stopping to analyse how you, the clinician, overcome the problems and



图5-12 我知道我在上周就应该把那些咖喱清理出来

Fig 5-12 "I knew I should have cleaned out that curry last week"

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些问题的答案告知患者，这将是非常有意义的。这些问题包括开口受限、后牙区颊肌过度肥大、颊肌过紧、强烈的呕吐反射等等。

一个积极的患者会急切地尝试新的方法以挽救他们的患牙。患者在此过程中也会逐渐认识到口腔中的一些部位需要特别的关注，这些认识巩固临床治疗的效果，即口腔中的某些部位需要多次洁治但无须抛光。患者习惯于"每六个月的常规刮治"并选择性地抛光，这种习惯具有积极意义，否则患者会认为口腔临床医生仅仅是"切削牙面"。一些接受长期治疗的患者很难改变某些观念——即临床技师只会刮治，而不会教他们如何进行疾病预防。值得提倡的是，临床技师应该学会停下操作，积极思考，并和患者讨论结石为什么会重新形成。

then explaining the solution to the patient. Examples include limited opening, overlaying of buccinator muscles onto posterior sites, a tight mentalis, or a strong gag reflex.

A motivated patient will be keen to try new techniques to save their teeth. The patient will also gradually learn that some areas of the mouth require more attention than others. This fact reinforces current clinical practice, i.e. certain areas of the mouth require more instrumentation and do not necessarily require polishing. In patients accustomed to a "regular six-monthly scale" selective polishing will need to be approached positively, otherwise patients may perceive that the clinician is "cutting corners!". Some long-term patients may find it difficult to convert from the hygienist undertaking scaling to talking about prevention. A suggestion is to stop and think, and discuss with the patient why the calculus reforms.

强化保健意识

利用小传单和海报来强化保健意识很有价值。开业医师可以鼓励对此感兴趣的牙科护士专门从事口腔健康促进工作，同时还可以在执业范围内充分发挥其才能。作为一种平面媒体小传单能够促进医师所制订方案的实施。牙刷制造商或英国牙科健康基金会可以提供这些宣传物品；候诊室也可以购买一些促进口腔健康的出版物、

Reinforcement of the messages

Leaflets and posters reinforcing health messages are very valuable. The practitioner may encourage an interested dental nurse to qualify in oral health promotion, and utilise their skills within the practice. With desktop publishing, leaflets can be produced to promote practice protocols. Alternatively, toothbrush companies or the British Dental Health Foundation can sup-

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录像带和光盘来达到强化保健意识的目的。

对于牙科全科医师来说，时间十分宝贵，但是举办一些社交性的、能让患者感到放松的小型座谈也是十分必要的。在进行交谈时，需要花一部分时间来强化一些重要的保健知识。

戒　烟

团队中的每个成员都有义务告知患者烟草的危害性以及吸烟带来的不良后果，同时也要充分利用医疗工作者在医患关系中的地位来建议患者戒烟。

1998年卫生部出版的、有关烟草的白皮书就强调卫生保健人员应在患者戒烟过程中扮演重要角色。卫生部建议初级卫生保健组织和医院要记录患者当前的吸烟状况，全科医师应当劝告吸烟者戒烟并且每年记录一次吸烟情况。

牙科治疗团队中的任何一名成员在经过培训后都可能提供合适的建议。牙科学校所教授的牙科卫生学和牙科治疗学中已经介绍了烟草的危害性和戒烟的方法。因此，获得一定资格的临床技师和治疗医师在接受培训之后，

ply them. Oral health promotion publications, videos and CD-ROMs may be purchased for the waiting room.

Time is very valuable in general practice and while it is important to have some social "chit chat" to place the patient at ease, some of the conversation time should be used to reinforce key health messages.

Smoking Cessation

All members of the team are in a prime position to educate patients about the detrimental effects of tobacco and the consequences of smoking. This position can be used to good advantage to give smoking cessation advice.

In 1998 the Department of Health published a white paper on tobacco use and highlighted the vital role members of the healthcare profession can play in smoking cessation. The department recommendations were that primary healthcare teams and hospitals should record the current smoking status of patients, and general practitioners should advise smokers to stop and record having done so at least once a year.

Any member of the dental team may give the appropriate advice, if they have received training. Tobacco use and strategies for smoking cessation are included in the curriculums of dental hygiene and dental therapy schools. Qualified hygienists and

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可以通过大量的事实，以感性的方式建议患者戒烟。

出于牙周炎治疗的需要，患者会和牙科临床技师频繁地进行预约复诊，这提供了一个可以有规律地监测吸烟情况并巩固戒烟效果的机会。同时牙科临床技师也是一名优秀的交流者，因此他们能与患者建立和谐的医患关系。

时间的限制是与患者谈论戒烟情况的障碍。已有证据表明，吸烟是引起牙周疾病的主要危险因素之一，因而在病情稳定期，戒烟和控制菌斑一样重要（Chapple 和 Gilbert 2002）。

团队协作，帮助患者戒烟

- 形成一个帮助患者戒烟的团队。
- 确保团队成员相互协作并承担相应责任。
- 明确每个成员的职责和任务。
- 指定谁是主角，谁是配角。
- 在团队中平均分配任务。

业务会议将给整个团队帮助患者戒烟提供了一个交流的机会。团队的协调者通过安排培训和提供文献资料

therapists are therefore suitably trained to advise patients on smoking cessation in a sensitive and informative manner.

The patient may have frequent appointments with the dental hygienist for the management of periodontitis. This offers opportunity for regular monitoring and reinforcement of smoking cessation. Dental hygienists are also good communicators and are therefore able to develop a rapport with their patients.

Time constraints are often quoted as a barrier to discussing smoking cessation with the patient. Evidence suggests that smoking is a major risk factor for periodontal diseases and, as a consequence, as important as plaque control in the disease stabilisation process (see Chapple and Gilbert 2002).

A team approach to smoking cessation

- Tackle smoking cessation advice as a team.
- Ensure collaboration and commitment from the whole team.
- Identify who should/could do what.
- Name who will have the active/support role.
- Share out the tasks amongst the team.

A practice meeting would be an opportunity to involve the entire team in advising patients in smoking cessation. A co-

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来确定戒烟方法。这种团队协作体系一旦形成，临床医师在每次就诊时只需花很少的时间来强化保健意识，并提出进一步的建议。

ordinator could consolidate the approach by arranging training and providing literature. Once established, it need only take a short time at each appointment for the clinician to reinforce the message and offer further advice.

帮助患者戒烟

1999年，健康教育局出版了一本指导牙科团队帮助吸烟者戒烟的书。书中的建议是基于4A法而提出来的（条栏5-1）。

Helping smokers to stop

The Health Education Authority in 1999 published guidance for the dental team to help smokers to quit. The recommendations were based on the "Four As" approach (Box 5-1).

条栏 5-1

4A 法

Ask *每次就诊都要询问吸烟情况。在患者每次就诊时，医生都应该询问其吸烟情况，记录吸烟史，并将信息记录在患者病历中。*

Advise *忠告吸烟者吸烟的危害并劝其戒烟。*

Assist *帮助吸烟者戒烟。*

Arrange *安排进一步的治疗方案，巩固戒烟效果。*

Box 5-1

The "Four As" Approach

Ask *about smoking at every appointment. The clinician is to ask about smoking at every opportunity, to take a smoking history, and to record the information in the patient's clinical notes*

Advise *all smokers of the risk and to stop*

Assist *smokers to stop*

Arrange *a follow-up*

吸烟史记录：

对正在吸烟的患者要了解：

- 他们为什么吸烟？
- 他们吸多少支烟？
- 吸烟多久了？
- 什么时候开始吸烟的？

Taking a smoking history

If a current smoker:

- Why do they smoke?
- How many cigarettes do they smoke?
- How long have they been smoking?
- When do they smoke?

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- 是否曾经戒过烟？
- 在他们戒烟的时候发生了什么？
- 他们是否对立即戒烟或再次戒烟感兴趣？

对曾经吸烟者应：

- 在他们病历中记录。
- 提醒他们定期复诊。

吸烟评估表对确定患者吸烟的量和打算戒烟的原因非常有意义（图 5-13）。一个可能成功戒烟的人通常：

- 已经准备好戒烟。
- 知道他自己吸烟的特点和吸烟的原因。
- 明白自己现在为什么要戒烟。
- 一旦戒烟，能够对将要发生的感受有所准备。
- 已经形成新的习惯，其可以取代吸烟的习惯。
- 一开始有“戒断效应”。

建　议

从建议的层面上来看，讨论尼古丁的替代治疗和提供书面信息是很可行的（表 5-2）。1998 年，学者 Raw 等指出，尼古丁替代治疗使戒烟率提高了 1 倍。1998 年，Smith 等在一个干预性研究中，结合牙科医师的辅导和尼古丁替代治疗，9 个月后仍然获得了 11% 的戒烟率。很少有人对替代物成

- Have they ever tried to stop?
- What happened when they tried to stop?
- Are they interested in stopping now or trying again?

If an ex-smoker:

- Make a note in their records.
- Remember to review periodically.

A tobacco assessment form is useful to determine the number of cigarettes smoked and the reasons for wanting to stop (Fig 5-13). People succeed in stopping smoking when they:

- are ready to stop
- understand their smoking patterns and their reasons for smoking
- know why they want to stop smoking now
- are prepared for how they will feel when they stop
- have developed alternative behaviours to replace their smoking habit
- make “staying stopped” a priority.

Advise

During the advice stage, it is appropriate to discuss the options of nicotine replacement therapies (Table 5-2) and provide written information. Raw *et al*. (1998) demonstrated that nicotine replacement doubled the rate of cessation. Smith *et al*. (1998) in an interventional study, using counselling by dentists and nicotine replacement

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日　期

姓　名

住　址

每天吸多少香烟？

这样吸烟多久了？

你作为一个吸烟者，吸烟是否很重要？　是／否

你曾经戒过烟吗？　是／否

如果是，戒了多少次？

戒烟能够持续多久时间？

以下选项是你现在戒烟的主要原因吗？

健康　是／否

费用　是／否

你不想吸烟成瘾　是／否

其他原因　是／否

如果选择是，请详细说明

在戒烟中，你面临的最大困难是什么？

图 5-13　吸烟评估表

Fig 5-13　Tobacco use assessment form

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表 5-2 尼古丁替代治疗
Table 5-2 Nicotine replacement therapies

产　品	用　量	建　议
尼古丁表皮贴★	5mg/16h 释放量 10mg/16h 15mg/16h	轮流放置在无毛发部位 开始时使用剂量为 15mg 者，应逐渐减少到 5mg
尼古丁口香糖★ （无糖型）	2mg<20 支烟 /d 4mg>20 支烟 /d	缓慢地咀嚼 30min；烟瘾重者服用 4mg 的尼古丁口香糖
尼古丁鼻腔喷雾剂	通过鼻腔黏膜作用的 500mg 装喷雾剂；最多每天使用64次	适合于戒烟期其他方法无效的严重成瘾者。其比表皮贴、口香糖或吸入器吸收更快。可能会刺激鼻腔
尼古丁吸入器★	每小丸10mg，6～12丸/d，经口腔黏膜吸收	尼古丁药丸与一塑料喷嘴匹配；适用于那些需要物理刺激的吸烟者
尼古丁药片★ (Microtab®)	对吸烟<20 支烟 /d 者，2mg/h。吸烟>20 支烟 /d 者 4mg/h	放置于舌下使其缓慢溶解
Amfebutamone/ Buproprion (Zyban® *)	150mg/d的药片服用3d，然后减半，最多治疗 7～9 周	用药时向内科大夫咨询。不适用于 18 岁以下者。禁忌：孕妇、有癫痫病史者、饮食失调者和躁狂与抑郁并发的精神病患者。副作用：口干

★ Nicotine®产品，Pharmacia 有限公司
* GlaxoSmithKline，Glaxo Wellcome(英国) 有限公司

瘾（Silagy 等，1996）。但是，替代治疗不适合于孕妇、16 岁以下的儿童以及心脏有问题的人群。已经生产出多种适合个别需要和成瘾人群需要的产品（图 5-14）。但通常情况下这些产品在国民卫生服务处难以获得。这些替代物应该持续使用 10～12 周，并且在此期间逐渐减量。如果3个月内没有将烟瘾戒掉，就需要对治疗进行回顾。

therapy, obtained an 11% cessation rate after nine months. Very few people become addicted to the replacement (Silagy *et al.* 1996). However, replacement therapy is not recommended during pregnancy, for children under 16 years of age or for patients with heart problems. There are a range of products to suit the needs of the individual and their pattern of addiction (Fig 5-14). The products are generally not available on

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图 5-14 戒烟产品

Fig 5-14 A range of smoking cessation products

the National Health Service. The replacement product should be continued for 10–12 weeks with gradual withdrawal over this period. If abstinence has not been achieved within 3 months, then treatment needs to be reviewed.

使用诸如 Fagerstrom 等调查问卷表来评估患者的烟瘾情况（表 5-3，图 5-15）有助于为不同的患者找到相应的最适合的替代治疗方法。

Assessing the patient's addiction using questionnaires such as the Fagerstrom Questionnaire (Table 5-3, Fig 5-15), helps to match the most appropriate replacement therapy to suit the needs of the individual.

表 5-3 Fagerstrom 得分分析

Table 5-3 Interpretation of the Fagerstrom score

得分	依赖性	推荐产品
1–3	低	2mg 尼古丁口香糖，或尼古丁药片，或尼古丁吸入器和药粉
4–5	中等	与常规吸烟一样全天贴尼古丁表皮贴； 2mg 尼古丁口香糖，或尼古丁药片以减轻常规吸烟的心理习惯； 应用尼古丁吸入器以适应手到口的动作习惯
6–7	高	与常规吸烟一样全天贴尼古丁表皮贴，或 4mg 的尼古丁口香糖，或 4mg 尼古丁药片
8–10	极高	尼古丁鼻腔喷雾剂或 4mg 尼古丁口香糖，或 4mg 尼古丁药片

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起床后多久您开始吸第一支烟？	5min 内	3
	6～30min	2
	30～60min	1
	60min 以后	0
在禁烟场所您是否觉得很难受	是	1
	否	0
哪一支烟您会克制住不去吸？	早上起床后的第一支	1
	其他	0
您一天吸多少支烟？	30 支以上	3
	21–30 支	2
	11–20 支	1
	10 支或 10 支以下	0
在起床后的头一小时您是否比	是	1
在临睡前吸的烟更多？	否	0
如果您病得很厉害以至于大部分	是	1
时间需要卧床您还会吸烟吗？	否	0
	总得分：	

图 5-15 评估患者的烟瘾情况——Fagerstrom 调查表

Fig 5-15 Assessing the patient's addiction – Fagerstrom questionnaire

吸烟者戒烟要点（图 5-16）：

- 确定一个戒烟的日期。
- 回顾过去的戒烟尝试过程——什么是有帮助的，什么又是最大阻碍。
- 从家人和朋友那里获得帮助。
- 找出潜在的问题并有计划的去解决。

安排好后续的复诊非常重要，如

Key points to cover with the smoker (Fig 5-16)

- Setting a date to stop.
- Reviewing past attempts – what helped or what hindered.
- Getting support of family and friends.
- Identifying potential problems and planning how to deal with them.

It is important to arrange a follow-up

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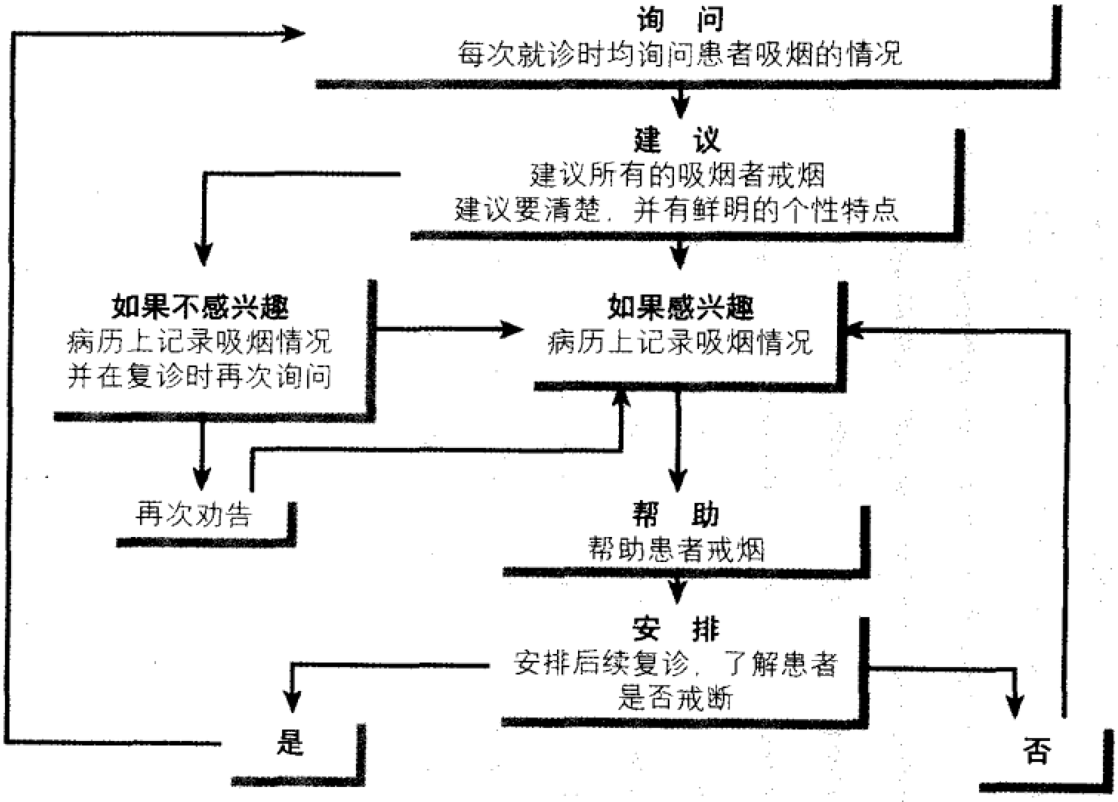


图 5-16　“4A”法戒烟（摘于健康教育局《帮助吸烟者戒烟》）

Fig 5-16 The “Four As” approach to smoking cessation. Adapted from Health Education Authority, Helping Smokers to Stop

果对那些感兴趣的患者安排后续的复诊，戒烟率会提高 2 倍以上。理论上，复诊要安排在患者选定戒烟日之后的一到两周内。如果患者戒烟成功，要祝贺并鼓励他们保持下去；如果戒烟不成功，要发现原因并探讨如何克服这些困难。寻找那些戒烟失败的患者并对患者的吸烟情况进行定期检查。很多吸烟者在最终戒烟成功之前都要进行数次的戒烟尝试，所以在戒烟的过程中戒烟者复吸是很正常的。

appointment. Cessation rates are more than doubled when follow-up contact is made with interested patients. Ideally, follow-up should be one to two weeks after the patient’s chosen cessation date. If the patient is successful in stopping smoking, congratulate them and encourage them to remain smoke free. If unsuccessful, find the reason why and discuss how these problems might be overcome. Ask for a recommitment and review the patient’s smoking sta-

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吸烟日记

吸烟日记（图 5-17）有助于患者关注他们的习惯，并确定什么时候和为什么他们吸烟。吸烟日记应被设计为能够反映患者无意识的习惯、日常工作、感觉以及其他问题。吸烟日记要记录两天戒烟情况，其中一天是周末戒烟情况。

帮　助

在帮助阶段，临床医生可以提供有效的建议，减缓焦虑并解决问题。在此期间：

- 回顾吸烟日记。
- 告之戒烟的好处。

tus periodically. Most smokers make several attempts to stop before finally succeeding, so relapse is a normal part of the process.

Smoking Diary

A smoking diary (Fig 5-17) helps the patient to focus on the habit and to identify when and why they smoke. It is designed to provoke reflection on their automatic habits, routines, feelings and problems. A smoking diary is kept for two days, one day being at the weekend.

Assist

At the assist stage, the clinician can give practical advice, alleviate worries and answer questions. During this phase:

- Review the smoking diary.
- Advise on the benefits of stopping smoking.

时 间	你在做什么？	你和谁在一起？	你感觉如何？	吸烟时你有多享受？	对于吸烟你有多需要？

图 5-17　吸烟日记
Fig 5-17　Smoking diary

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- 强调健康的好处。
- 突出经济上的好处。
- 促进社会的认同。
- 加强自我控制。
- 突出健康的理念和高质量的生活。
- 鼓励所有的执业员工去帮助和支持患者进行戒烟。

- 提供宣传小册子（确保它们实时更新）。

信　息

- 世界无烟日。
- 戒烟热线：0800 00 22 00。
- 戒烟网站：www.quit.org.uk

保持戒烟状态

可以预计患者在戒烟后会非常渴望吸烟，所以在此期间提供帮助和支持很重要。抵制诱惑的建议通常都很有效，包括从事替代性的活动，如体育锻炼或咀嚼口香糖等，刷牙也会有所帮助。

戒断症状可能包括咳嗽增加、肠道不适、头昏眼花、睡眠不稳、情绪波动、感觉饥饿等。这些症状将会在2～3周后消退，因此在戒烟早期，支持是无价的。

健康教育局推荐的四D法：

- Emphasise health benefits.
- Stress the economic benefits.
- Promote the social acceptance.
- Reinforce the sense of self-control.
- Highlight well-being and quality of life.
- Encourage all practice staff to reinforce and support the patient's attempt to stop smoking.
- Provide information leaflets (ensure these are kept up to date).

Information

- National No Smoking Day.
- Quitline 0800 00 22 00.
- Quit website www.quit.org.uk.

Staying stopped

It is expected that the patient will feel cravings for a cigarette after stopping smoking. Help and supportive advice is essential during this period. Suggestions to ward off temptations are very useful and may include engaging in an alternative activity, such as exercise or chewing gum. Brushing the teeth is also helpful!

Withdrawal symptoms may include an increase in coughing, bowel upsets, dizziness, sleep disturbances, mood swings and hunger. These symptoms will subside over 2–3 weeks, hence support in the early days of cessation is invaluable.

The Health Education Authority recom-

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1. 推迟吸烟的欲望。
2. 深呼吸。
3. 饮水。
4. 做其他的事。

mended the "Four Ds":

1. Delay the urge to smoke.
2. Deep breathe.
3. Drink water.
4. Do something else.

临床相关要点

以下内容可对教育在预防牙周疾病中的有效性进行评价：

- 能自我识别疾病的表现。
- 了解牙齿难以清洁的区域。
- 理解每天清洁牙间隙的重要性。
- 知道虽然能够获得医师的支持，但控制菌斑还是得靠自己。

以下内容可对患者具有的长期、持续保持口腔健康的意识进行评价：

- 承诺终身进行有效的菌斑控制。
- 定期护理。
- 戒烟。
- 戒烟指导是完整的牙周疾病治疗和预防的一部分。

Key Points of Clinical Relevance

Effective patient education for the prevention of periodontal disease may be evaluated by:

- Self-recognition of signs of disease.
- Understanding of difficult-to-clean areas.
- Understanding the necessity to undertake interdental cleaning daily.
- Understanding that support is available, but that it is their responsibility to maintain plaque control.

Consistent, long-term motivation may be evaluated by:

- A commitment to efficient, effective plaque control FOR LIFE.
- Regular attendance.
- Cessation of smoking.
- Smoking cessation counselling should be an integral part of periodontal therapy and prevention.

拓展阅读
Further Reading

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第 6 章 口腔疾病预防Ⅱ：牙体组织疾病

Prevention of Oral Disease II: Diseases of the Hard Tissues

目　的

本章的目的是指导牙科治疗团队预防牙齿硬组织的破坏。

要　点

团队中的每一名成员者应该了解并能传递预防龋病、牙齿酸蚀和磨损等健康信息。

简　介

牙科临床技师和牙科治疗医师在教育患者预防引起牙齿硬组织破坏的多种疾病中（如龋病、牙齿酸蚀和磨损等）起重要作用。

龋　病

龋病是因细菌代谢糖类产生酸从而使牙体硬组织脱矿的过程。含钙的羟基磷灰石在pH值低于5.5时就会溶解。因此，为了预防龋病应调节饮食，减少菌斑pH值在临界值以下发生的概率。

Aim

The aim of this chapter is to guide the dental team through the prevention of hard tissue tooth loss.

Outcome

The team members should have an understanding of the delivery of health messages to prevent dental caries, tooth erosion and abrasion.

Introduction

Dental hygienists and dental therapists have a role in educating the patient in the prevention of hard tissue tooth loss by dental caries, erosion and abrasion.

Dental Caries

Dental caries is a process of demineralisation caused by bacterial metabolism of fermentable carbohydrates. It is estimated that calcium hydroxyapatite will begin to dissolve when pH falls below 5.5. Dietary advice to prevent caries is therefore in-

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tended to reduce the duration and frequency of occasions when the pH of microbial plaque falls below the critical level.

对于那些正在接受牙周治疗的患者，应重点强调预防继发龋和新的根面龋。这是因为：被诊断为慢性牙周炎的患者大多为中年人，口腔内很可能有以前制作的修复体。患者可能由于牙周病或者龋病缺失牙齿，常常戴有局部义齿。患者也可能由于过去患有某种疾病或者服用了某些药物而使得口腔容易干燥；患者还可能会出现牙周组织退缩，牙齿邻面、颊侧、舌侧和根分叉区根面的牙本质暴露、脱矿。因此要预防龋病，就要了解引起龋病的局部危险因素、饮食因素和生活习惯。

In patients presenting for the management of periodontal disease, the emphasis is on prevention of secondary caries and primary root caries. This is because patients with a diagnosis of chronic periodontitis tend to be middle aged at the time of diagnosis and are more likely to present with previously restored dentitions. They may have lost teeth through either periodontal disease or caries and may wear partial dentures. They may have a medical or medication history which predisposes them to xerostomia and have recession of the periodontal tissues, exposing radicular dentine to demineralisation in the interproximal, buccal, lingual and furcation areas. Prevention is therefore aimed at identifying local risk factors, dietary factors and relevant habits.

识别菌斑和局部危险因素

显示菌斑，并将菌斑滞留区域显示给患者，这是一种非常有效的方法。显示义齿表面相对应的菌斑滞留部位也是一种十分有效的方法。

Identifying plaque and local risk factors

One of the most effective methods is disclosing the plaque and demonstrating to the patient the plaque retained in a specific area. Disclosing the fitting surface of dentures is also useful.

随后的教育包括教会患者选择合适的特异性辅助清洁工具，以便去除菌斑；同时需要谨记的是提高患者双手的灵活性，并提供相应的口腔清洁

Education subsequently involves selection of the most appropriate cleaning aid specifically to remove the plaque, bearing in mind the patient's manual dexterity and

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产品以供他们购买。

the availability of the product to be purchased.

了解致龋的饮食因素和生活习惯：

Identifying dietary factors and habits

饮食因素分析可以分为以下两个方面：

1．24小时分析——记录患者在过去 24 小时的所有饮食状况。

2．3 天分析——连续记录患者 3 天的饮食状况，3天内至少有一天属于周末时间。

Dietary analysis may be done in two ways:

1. *24-hour analysis* — the patient documents everything eaten and drunk in the previous 24 hours.

2. *3-day analysis* — the patient documents everything eaten and drunk over a 3-day period. One day, at least, should be during the weekend.

诚实是成功的关键（图 6-1）！

随后，在每个糖摄入的时间点上画红色的圆圈，牙科临床技师或治疗医师就能对患者的饮食结构进行分析。教育可以从强调减少外源性非奶制糖类的摄入频率开始，并建议采用合适的替代品。

Honesty is the key to success! (Fig 6-1).

The dental hygienist or therapist is then able to analyse the diet by circling in red every occasion when sugar is consumed. The education process can then commence with emphasis on reducing the frequency of non-milk extrinsic sugars and the suggestion of suitable alternatives.



图 6-1　“在电影院里我只留下了我吃的太妃糖的包装袋！”

Fig 6-1 “I’ve only left out the bag of toffees I ate at the cinema!”

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教育的内容还包括让患者了解他们自己的口腔状态，并与患者讨论如何预防关键牙的丧失，以及作为一个咀嚼单位，口腔是如何行使功能的。了解的相关内容越多，患者就越有可能自觉的进行口腔保健。活动义齿和固定义齿的基牙、拔牙的后果是教育中常举的例子。简单向患者解释桥基牙缺失后将只能使用活动义齿的原因，这有助于增强他们的预防意识（图6-2）。教育患者保持牙齿咬合接触，避免出现无功能的牙齿以及随之而来的菌斑堆积（图6-3）；还应强调定期复查的重要性，这样可以尽早发现邻接面和根分叉区的龋损。

The education process should involve discussion with the patient on the prevention of the loss of "key teeth" through understanding their oral cavity and how it functions as a masticatory unit. The greater the understanding the more likely the personal commitment to preservation. Examples include education regarding abutment teeth for dentures and bridges and the consequences of extraction. A simple explanation of how loss of a bridge abutment may lead to denture provision will help the patient to focus on prevention (Fig 6-2). Education of the patient should focus on the maintenance of occlusal contacts to avoid non-functional teeth and subsequent plaque retention (Fig 6-3) and reinforcement of the importance of regular recall appointments for the early detection of interproximal and furcation caries.

根面龋发展迅速。由于牙髓可能在早期受累，因此症状出现时疾病已

Root caries can progress rapidly, and because the pulp may become involved at

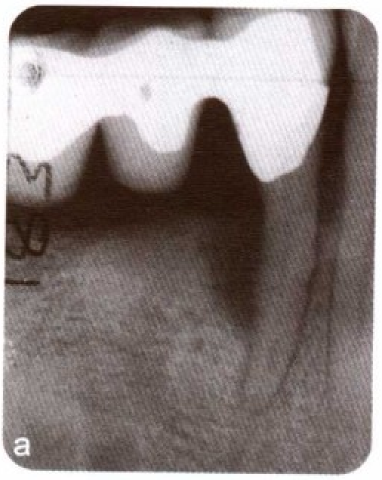




图6-2a和b 关键牙的保持如固定桥的基牙

Fig 6-2 a and b Retentrion of key teeth, e.g. bridge abutments

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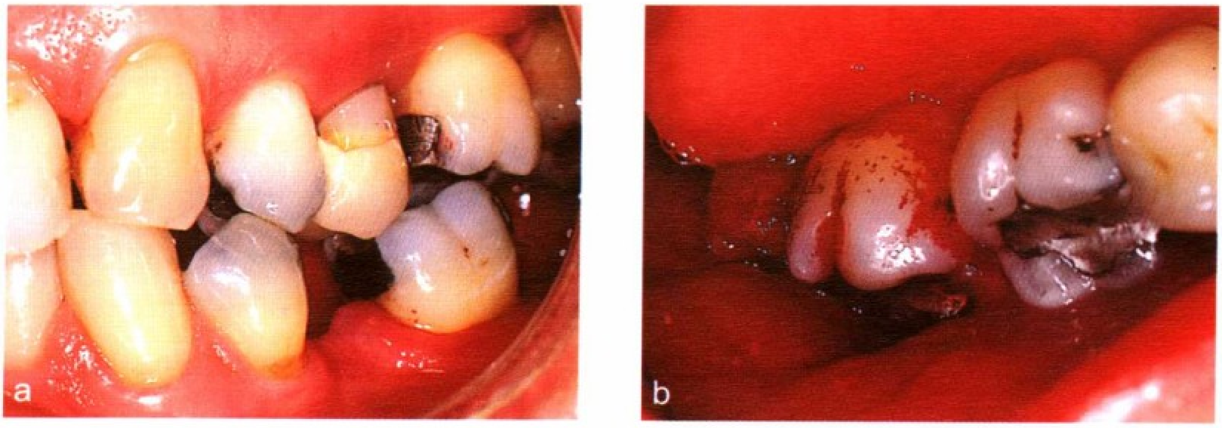


图 6-3a 和 b 一个无功能的牙齿以及腭侧堆积的菌斑

Fig 6-3 a and b A non-functional tooth and plaque accumulation from the palatal aspect

经发展到晚期。在同一个患者体内，新暴露的牙根面脱矿的速率比正常的釉质裂隙脱矿的速率快，这是由于牙根表面从未受到唾液中钙磷离子的作用，另外根面牙本质中矿物质的含量比釉质中的少。

患有慢性牙周炎的患者经常抱怨牙齿敏感，这时可以推荐患者使用一些能降低牙齿敏感性的牙膏。牙科医师有责任对这些症状作出诊断，但这并不是说临床技师和牙科治疗医师对此就漠不关心。如果经过数月努力，全面的治疗后，牙周情况趋于稳定，但牙齿最终因为龋坏而被拔除，这将使人感到非常沮丧。

a relatively early stage, the consequences of late detection are substantial. Freshly exposed root surfaces will demineralise at a faster rate than sound enamel fissures in the same patient. This is because the root surfaces have not been exposed to calcium and phosphate ions in saliva, thus favouring demineralisation of the surface of the lesion, and because root dentine has a lower mineral content than enamel.

Patients who have chronic periodontitis complain of dentine hypersensitivity so frequently that the recommendation of a suitable desensitising dentifrice can be an automatic response. It is the dentist's responsibility to diagnose the problem as it is not within the hygienist's or therapist's remit. It is disappointing to lose a tooth through caries when the periodontal condition is stable after months of effort by all concerned!

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预防产品的使用

牙科临床技师和治疗医师可以使用氟化凝胶以延缓矿化组织脱矿，或是使用洗必泰凝胶(一种涂漆)以暂时减少抗龋能力弱的区域致龋性菌斑的附着。应教会患者在自己家中使用这些产品，而且使用这些产品只需要一个棉花棒或者牙间刷即可。

Application of preventive agents

The hygienist or therapist may apply either fluoride gel to limit the demineralisation of calcified tissues or apply chlorhexidine gel as a varnish to temporarily reduce the cariogenic plaque load in a vulnerable area. Patients can be taught to apply the latter at home, either with a cotton bud or with an interdental brush.

牙齿酸蚀

所有的临床医师都应具备识别、记录和处理牙齿酸蚀的能力。受酸侵蚀时，牙齿开始脱矿并随后缺失，但这种缺失不同于龋病。酸蚀的过程不依赖于细菌的代谢，酸蚀发生在没有菌斑附着的区域，特别是在牙龈退缩的部位（图6-4）。在牙周组织退缩的区域，暴露的根部牙本质的破坏非常迅速。牙周治疗维护期，患牙易受到酸的侵蚀而导致硬组织丧失。酸的来源可以是内源性的也可以是外源性的。

Dental Erosion

All clinicians have a role in the recognition, recording and management of dental erosion. The tooth substance becomes demineralised and subsequently lost, but unlike caries, the process is not dependent upon bacterial metabolism. Erosive lesions tend to occur in plaque-free sites and in particular where gingival recession has occurred (Fig 6-4). Destruction of radic-ular dentine at sites exposed by migration of the periodontal tissues can be rapid. The pa-



图6-4 牙龈退缩后出现的牙酸蚀症

Fig 6-4 Erosion follwing gingive recession

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tient in the maintenance phase of periodontal therapy may be particularly vulnerable to this form of tooth tissue loss. The acid source may be intrinsic or extrinsic.

对于中年患者或年长患者，内源性酸多来自于胃－食管反酸。受累部位多位于上颌牙齿的腭侧，以及下颌牙齿的殆面和颊侧。修复体边缘的牙齿硬组织也可能因为脱矿而导致邻接关系丧失。

Intrinsic sources in the middle-aged or elderly patient tend to be due to gas-tro-oesophageal reflux. Evidence may be seen on the palatal surfaces of the upper teeth, and the occlusal and buccal aspects of lower teeth. Mineralised tissue may be lost adjacent to the margins of restorations.

外源性酸来源于食物和饮料。常导致上颌牙齿唇侧和腭侧面脱矿。牙齿硬组织损失的范围和差异性可以用如Smith和Knight指数（1984）等方法进行评价。牙科临床技师和治疗医师可以记录基线数值并制取研究模型。这些数值和模型有助于后期的教育、激励和监测。

Extrinsic sources are acidic foods and drinks. These can lead to demineral-isation of the labial and palatal surfaces of the upper anterior teeth. The extent and diversity of the tooth loss can be measured by an index such as the Smith and Knight's Index (1984). The hygienist or therapist can record the base line findings and take impressions for study models. These will be useful for educational, motivational and monitoring purposes.

酸蚀症的治疗

Stages in management of dental erosion

识别并确定病因。仔细的医学、社会学和个人病史的调查研究可以揭示酸的来源。提问应有针对性，尤其当患者饮食无规律时，应高度怀疑其为酸蚀症。一个为期3天的饮食记录将会对确定酸蚀症有所帮助。

Recognise and establish the aetiology. A careful medical, social and personal history may reveal the source of the acid. The questioning needs to be sensitive, especially if an eating disorder is suspected. A three-day dietary sheet is helpful.

临床医师应该认真地区分致病因子，并且提供适合个人的饮食建议。为

The clinician should carefully identify causative factors and offer dietary counsel-

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了实现健康饮食，人们不得不摄入一些容易加重牙齿酸蚀症状的食品，如食用一些推荐的水果。

ling advice tailored to the needs of the individual. Frequently, compromises have to be reached between eating a healthy diet, including the recommended intake of fruit, and the exacerbation of erosion!

建议患者不要在食用酸性成分（如一杯红酒）的食物后刷牙，或者在反酸之后刷牙。用含碳酸氢根的苏打水漱口液漱口或喝杯牛奶将有助于中和唾液中的酸。进餐时，患者应该控制酸性饮料的摄入量，尤其应该注意睡前不要饮用酸性饮料。

Advise the patient to avoid tooth brushing after a meal with an acidic component such as a glass of red wine, or after acid reflux. A bicarbonate of soda mouth rinse or a drink of milk will help neutralise the acid within saliva. The patient should confine acidic drinks to meal times and particularly avoid them before retiring to bed.

临床医师应该教会患者局部使用氟化物或使用氟化物漱口水漱口，这将有助于脱矿的牙面再矿化。每天坚持漱口比每周漱口一次的效果更好，但这需要患者有良好的依从性。现在氟化凝胶已经可以在家里使用，但不要在刷牙时使用。Duraphat牙膏含有高达2 800ppm浓度的氟化物（表6-1）。牙科医师和牙科临床技师以及牙科治疗医师应该共同努力以预防和控制牙齿的酸蚀。如果牙齿因酸蚀而导致牙本质暴露，则要推荐患者使用脱敏牙膏或是建议在其酸蚀表面进行修复。强调团队合作将有助于强化保健意识，还需指明的是患有胃－食管反流症的患者应转诊治疗。

The clinician may apply fluoride topically to aid surface remineralisation or recommend fluoride rinses. Daily rinsing is more effective than a weekly regime, but requires greater compliance. Fluoride gels are available for home use but should be applied at a time separate from tooth cleaning. A Duraphat® dentifrice with a higher fluoride content of 2,800 ppm is also available (Table 6-1). The dentist and dental hygienist/therapist must work together in the prevention and management of dental erosion. Where the lesions have exposed dentine a desensitising dentifrice may be recommended or the dentist may advise restoration of eroded surfaces. Reinforcement of co-ordinated advice by the team will consolidate the health messages. Referral for the management of gastrooesophageal reflux may be indicated.

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表 6-1　局部氟化物的使用
Table 6-1　Topical fluoride use

产　品	氟化物浓度	用　法	应　用
涂漆	2.26%	诊室使用	一年 2 次
酸性的磷酸盐	1.23%	诊室使用	一年 2～4 次
氟化物凝胶	0.4%	家　用	每日使用
漱口水	0.05%	家　用	每日使用
	0.2%	家　用	每周使用
牙膏	2800ppm	家　用	每日使用

牙齿磨损

通过检查牙齿颈部的釉质、牙骨质或牙本质的水平沟纹（楔状缺损）可以发现这种形式的病理性牙齿损耗。这种损耗通常位于牙齿的颊侧。

引起牙齿磨损最常见的原因是频繁横刷牙齿。磨损也可能出现在牙周病进展期的患牙上。这是由于患者使用的是错误的水平拉锯式的刷牙方法，而没有使用正确的刷牙方法，如改良 Bass 法（图 6-5）。旧的牙刷会粘附较多的牙膏，这些牙膏会导致牙齿磨损更加严重。刷牙时在干燥紧凑的牙刷头上面挤上一段约豌豆大小的牙膏就可以了。

处于维护期的患者更容易出现牙齿磨损。这是由于他们的刷牙方法与新的稳定的牙周组织的轮廓不相适应。应指导患者正确放置刷头（刷头应靠

Dental Abrasion

This form of pathological tooth wear is detected by horizontal grooving of the enamel, cementum or dentine in the cervical region, usually of the buccal surfaces of the teeth.

The most common cause is overzealous tooth brushing in a horizontal plane. It may occur in patients with active periodontal disease because they are practising the horizontal scrub brushing technique rather than gingival sulcular cleaning such as the modified Bass technique (Fig 6-5). Toothbrushes that are worn out hold more paste which leads to potentially greater abrasion. A pea-sized amount of paste should be placed on a dry compact headed brush.

Patients in the maintenance phase are prone to abrasion lesions because the brushing technique has not been adapted to the new contours of the stable periodontium.

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近根部)，以避免根面牙本质磨损而出现楔状缺损。清除龈上菌斑同样十分重要，因为如果刷牙方法无效，菌斑就会大量堆积。

牙科医师和牙科临床技师以及治疗医师还应知晓引起磨损的其他原因，如不合适的义齿。显然，通过详细询问个人的社会背景，关注一些诸如咬线以及咬烟斗等的习惯，可以发现引起磨损的特殊原因，同时要予以纠正(图6-6)。

Patients require instruction in the placement of the brush further apically to avoid grooving of the radicular dentine. This is equally important for the removal of supragingival plaque, which will accumulate if the brushing technique is ineffective.

The dentist and hygienist/therapist will need to be aware of other causes of abrasion such as ill-fitting dentures. Apparently, idiopathic causes of abrasion may be revealed and subsequently rectified by taking a detailed social history and noting habits such as cutting threads with the teeth and pipe smoking (Fig 6-6).

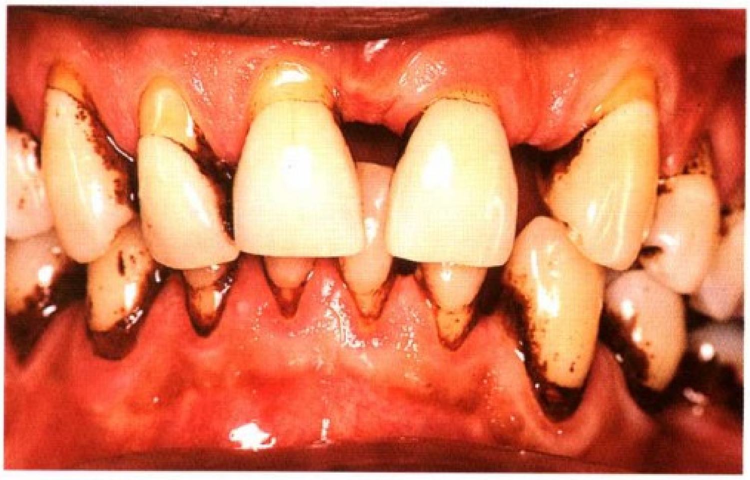


图6-5 不正确的刷牙方法引起的磨损

Fig 6-5 Abrasion due to an incorrect brushing technique



图 6-6 收集的古董烟斗

Fig 6-6 A collection of antique pipes

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结　论

牙齿硬组织的丧失是多因素的，通常无法归结于一个原因。牙龈退缩，根面暴露会导致龋齿、酸蚀和磨损。通过简单的信息告知患者根面上潜在的薄弱位点，是预防这些疾病最有效方法。

Conclusion

Loss of tooth substance is of multifactorial aetiology. It is often not possible to attribute its cause to one factor. Gingival recession exposes the root surface to dental caries, erosion and abrasion. Educating the patient about the potential vulnerability of the root surfaces with simple messages is the most effective form of prevention.

拓展阅读
Further Reading

1 Dietary Sugars and Human Disease. Committee on Medical Aspects of Food Policy. London: HMSO, 1989.

2 Smith BGN, Knight JK. An index for measuring the wear of teeth. Br Dent J 1984;156: 435-438.

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第7章 牙周疾病的治疗

Management of Periodontal Diseases

目 的

本章的目的是了解目前牙周疾病的分类；回顾最实用的调查和诊断牙周疾病的方法；对一名胜任的牙科全科医师发回的牙周治疗个案进行全面地评述。

要 点

阅读完本章，牙科全科医师将熟悉牙周疾病的检查、诊断和最初的治疗工作，并且能够判断何种类型的患者可以通过转诊给专科医师而获得更好的治疗。

牙科全科医师的作用

牙科全科医师在初级的口腔保健中起主要作用，同时在口腔健康教育、检查牙周疾病并在后续的诊断以及安排恰当的治疗中起到重要作用。

在患者就诊的过程中，牙科医师

Aim

This chapter aims to consider the current classification of periodontal diseases; review best practice for screening and diagnosis of periodontal diseases; and give an overview of the periodontal therapy falling within the remit of a competent GDP.

Outcome

Having read this chapter the reader will be familiar with the screening, diagnosis and initial management of periodontal diseases in a general dental practice environment and be able to identify patients who would benefit from referral to a specialist.

The Role of the General Dental Practitioner

The GDP is the major provider of primary dental care and has a significant role in oral health education, screening to detect periodontal disease and following diagnosis to arrange appropriate care.

The dentist can coordinate and encour-

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应该鼓励进行口腔健康预防并调整预防措施，同时应认识到牙科治疗团队中的所有成员都能影响患者的牙周健康。例如，所有成员都能够并且应该鼓励和支持患者戒烟。拥有口腔健康教育证书的牙科护士可以在口腔预防机构工作，并协助患者形成和保持良好的口腔卫生习惯。口腔保健的每一个方面的成功和稳定几乎都依赖于一种菌斑控制高标准的建立。

牙科临床技师应掌握其他的技术以进行有效的牙周非手术治疗。牙周病多为慢性疾病，在英国，口内仍有牙齿的成年人中，附着丧失在 6mm 或 6mm 以上的仅占 8%。所以，需要进行复杂的专科治疗的患者并不多。因此，由牙科临床技师进行初步的牙周非手术治疗是合适的。因为这样不但可以保证质量还能降低治疗费用。已经充分证实了牙科临床技师在牙周健康的长期维护中的作用，而有关牙周治疗的长期效果的研究也已有力地证明维持良好的口腔卫生可以预防牙周疾病，或者至少可以延缓牙周疾病的进一步发展。

age a preventive approach to dental health throughout the practice, in the recognition that all members of the dental team can influence a patient's periodontal health. For example, every member of staff can and should encourage and support patients in smoking cessation. Dental nurses with an Oral Health Educator Certificate can manage Preventive Dental Units and assist individual patients to develop and maintain good oral hygiene. The success and stability of almost every aspect of dental care is dependent upon establishing a high standard of plaque control.

The dental hygienist has additional skills appropriate to the provision of an effective non-surgical course of periodontal therapy. The majority of periodontal disease is of a chronic form and only 8% of dentate adults in the UK have loss of attachment of 6 mm or more. Thus, the number of patients requiring complex specialist treatment is low and the delegation of initial non-surgical periodontal care to a dental hygienist is appropriate due to the high quality and reduced cost of treatment. The role of the hygienist in long-term maintenance of periodontal health has been well documented. Studies of the long-term outcome of periodontal treatment have demonstrated convincingly that maintenance of a high standard of oral hygiene prevents or at least reduces the progression of periodontal

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准备进行义齿修复治疗时（第10章），牙科医师要和牙科技师密切合作以确保固定和可摘修复体的设计和制作有利于口腔卫生的维护，同时避免修复体对余留牙齿的𬌗创伤（第9章）。因此，大部分牙周病患者都能够在牙科医师团队中得到治疗和高质量的维护，整个牙科治疗团队在预防牙周疾病中起着重要作用。

牙周疾病发生的早期，患者很少有症状，即使有，也常常很难察觉到问题所在。因此，牙科全科医师有责任去监测并检查患者是否患有牙周疾病。当临床检查发现有疾病指征时，就应进行相关的X线检查。诊断后，医师就应该制定治疗计划，详细说明治疗效果。

牙周治疗的长期效果有赖于患者的依从性。应该认识到不是所有的患者在心理上或生理上都能够依从于最佳的口腔卫生标准，一些人甚至在治疗后效果更差。然而，所有的患者都有对牙周疾病进行治疗的知情权并能做出选择。

diseases.

In the provision of restorative dental care (Chapter 10) the dentist should work closely with the dental technician to ensure that both fixed and removable prostheses are designed and constructed to facilitate oral hygiene and avoid occlusal trauma to the remaining teeth (Chapter 9). Thus, there are relatively few periodontal patients who cannot be treated and maintained to high standards within the confines of a general dental practice and the whole dental team has a role to play in the prevention of periodontal disease.

Periodontal disease in its early stages causes few, if any, symptoms and patients are often unaware that they have a problem. It is therefore the duty of the GDP to monitor and screen patients for the presence of periodontal diseases. Where clinical findings indicate disease, relevant radiographs should be obtained. The practitioner should, following diagnosis, develop a treatment plan with specified therapeutic outcomes.

The long-term outcome of periodontal therapy is dependent upon patient compliance. It should be recognised that not all patients will be psychologically or physically capable of complying with the optimal standard of oral hygiene and some may even decline therapy. Nevertheless, all patients have the right to make an informed choice in relation to periodontal manage-

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ment.

所有的牙周情况评估都应该记录在临床病历上，尤其应记录牙周袋探诊深度、临床附着水平、出血部位、菌斑指数和牙齿松动度。临床上牙周治疗的成功与否在很大程度上取决于龈下菌斑的减少，而牙周治疗效果的评估还应包括患者的舒适度以及美感。牙周状况一旦稳定，就要安排进行支持治疗。

All periodontal assessments should be recorded in the clinical notes. In particular probing pocket depths, clinical attachment levels, bleeding sites, plaque scores and mobility should be recorded. All clinically successful modalities of periodontal therapy include the substantial reduction of subgingival plaque. The outcome of periodontal therapy should be assessed in relation to patient comfort and aesthetics. Once periodontal stability has been achieved it is essential to arrange a supportive care programme.

临床检查方针

牙周疾病可以发生于任何年龄，因此，对所有的患者定期进行牙周检查是很重要的。评估每个患者发生牙周疾病的可能性将影响维护治疗的频率。英国牙周病学协会和英国皇家外科学院牙科全科医师系都已制定了牙周疾病临床常规检查大纲。

Clinical Guidelines for Screening

Periodontal diseases can occur in any patient regardless of age. It is therefore vital to perform a periodontal screening examination for all patients at regular intervals. An assessment of each individual patient's "risk" of developing periodontal disease will influence the frequency of maintenance. The British Society of Periodontology and the Faculty of General Dental Practitioners of the Royal College of Surgeons of England have both produced clinical guidelines recommending routine screening for periodontal disease.

我们推荐使用基本牙周情况检查(basic periodontal examination，BPE)。在制定正畸治疗计划和复杂的修复治疗计划时必须进行基本牙周情况检查。

The Basic Periodontal Examination (BPE) is the recommended screening method. The use of BPE is an essential feature in orthodontic and complex restorative

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BPE的优缺点在本系列丛书的第一本中有详细的介绍（Chapple and Gilbert，2002）。牙周治疗需要和基础牙周治疗读数之间的关系见表 7-1 和图 7-1。

treatment planning. The benefits and limitations of the BPE are detailed in the first book of the Quintessentials series (Chapple and Gilbert 2002). The BPE codes and their relevance to periodontal treatment needs are shown in Table 7-1 and Fig 7-1.

表 7-2 概述了当临床检查发现患者患有牙周疾病时推荐患者选择射线检查的标准。各种全景射线检查方法都是适宜的。只有在保证前牙区段能够获得高质量影像的情况下才能使用全景片。

Table 7-2 summarises the recommendations for radiographic examination of patients when clinical examination reveals the presence of periodontal disease. A variety of panoramic radiographic equipment is available. Panoramic films are of use only when good quality imaging of the anterior sextants can be achieved.

表 7-1 基本牙周情况检查（BPE）读数

Table 7-1 The Basic Periodontal Examination (BPE) codes

BPE 读数	临床状况	治疗需要
0 探针涂色段完全可见，没有牙石，没有牙龈出血	健康牙周组织	重复检查
1 探针涂色段完全可见，没有牙石，有菌斑和牙龈出血	龈炎	口腔卫生指导
2 龈上或龈下牙石，医源性的菌斑滞留因素，没有牙周袋深度大于3mm，探针涂色段完全可见	龈炎	口腔卫生指导，洁治刮治，去除菌斑滞留因素
3 前牙区段牙周袋最深处，探针涂色段仍然部分可见	牙周炎，浅牙周袋，深度≤5mm	口腔全科医师非手术治疗
4 探针的涂色段完全不可见	牙周炎，深牙周袋，深度≥5.5mm	可能需要专科医师复杂的牙周治疗
* 对其他读数的注释	根分叉病变或附着丧失＞7mm	预后差，参考专科医师的评价

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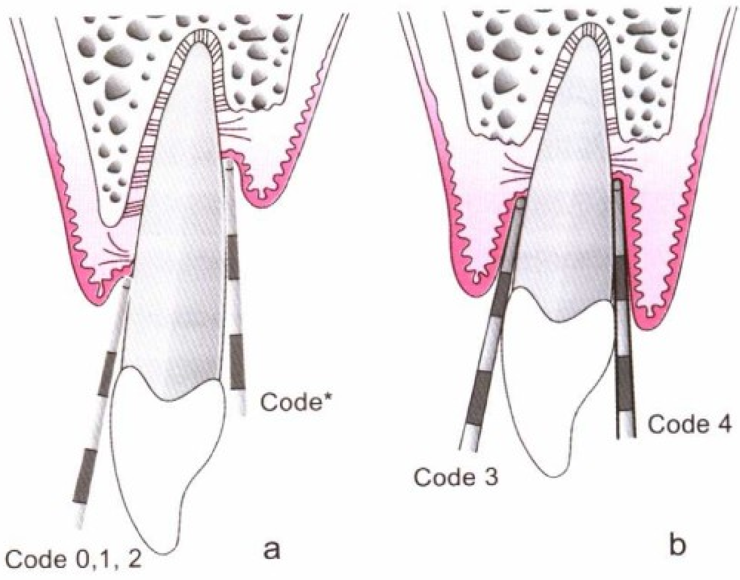


图7-1 a.图示为基础牙周检查读数0，1，2 +*；b. 图示为基础牙周检查指数 3 和 4
Fig 7-1 (a) Line diagram illustrating the BPE coding system 0, 1, 2 + *. (b) Diagram illustrating the BPE coding system for codes 3 and 4

表 7-2 牙周疾病患者选择射线检查的标准
Table 7-2 Selection criteria for radiographic examination in patients with periodontal disease

疾 病	分 布	严 重 程 度	射 线 检 查
牙龈炎			不需要
牙周炎	广 泛	轻微（LOA ≤ 3mm）	DPT
		中等（LOA> 3mm，但<5mm）	DPT并追加局部病变区（如，根分叉病变）的根尖片（PAs）和垂直咬殆翼片
		严重（LOA>5mm）	直立牙根尖片或考虑清晰度时DPT
牙周炎	局部——仅累及后牙	轻微	水平咬殆翼片
		中等	垂直咬殆翼片
		严重	受累牙齿根尖片或 DPT ± 根尖片
牙周炎	局部——仅累及前牙	轻微	受累牙齿根尖片或 DPT ± 根尖片
		中等	同上
		严重	同上
牙周炎	局部——累及前后牙	轻微	DPT
		中等	DPT ± 后牙区垂直咬殆翼片 ± 前牙区根尖片
		严重	根尖片或者 DPT ± 根尖片

LOA ＝附着丧失；DPT ＝牙科全景片；PA ＝根尖片

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诊　断

使用BPE法有利于牙周疾病的筛选，但为了诊断并阐明详细的治疗计划还需要详细地记录病史并进行检查。这些在Chapple and Gilbert，2002一书中详细阐述。牙周情况的检查应该包括：

- 口腔卫生情况，菌斑的位置和数量以及牙石的沉积情况。
- 记录菌斑滞留因素。
- 评估牙龈炎症表现、退缩以及增生情况。
- 牙周探诊，记录牙周袋探诊深度、探诊出血情况和化脓情况。
- 根分叉病变的位置。
- 牙齿松动的情况和程度。
- 咬殆评估，包括静态和动态时的功能、磨耗小平面、早接触。
- 全身系统性疾病的口腔黏膜表现。
- 射线检查（见表7-2）。

牙周疾病的分类

除了全面的临床检查外，应详细了解社交史、病史、家族史以协助诊

Diagnosis

Screening using the BPE can highlight the presence of periodontal disease, but a detailed history and examination are required to reach a diagnosis and formulate a detailed treatment plan. These topics are detailed in Chapple and Gilbert 2002. A periodontal examination should include:

- Standard of oral hygiene, location and quantity of plaque and calculus deposits.
- Note of plaque retention factors.
- Assessment of the gingiva for signs of inflammation, recession and hyperplasia.
- Periodontal probing, recording probing pocket depths, bleeding on probing and suppuration.
- Location of furcation defects.
- Presence and degree of tooth mobility.
- Occlusal assessment to include static and dynamic function, wear faceting and premature contacts.
- Oral mucosal assessment for signs of systemic diseases.
- Radiographic examination (see Table 7-2).

Classification of periodontal diseases

The classification of periodontal diseases is complex. In addition to thorough clini-

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断。最近的分类见于 1999 年 Illinois 国际研讨会上有关牙周疾病和状态的分类，表 7-3 是其摘要。对该分类系统的

cal examination, a detailed social, medical and family history should be obtained to assist diagnosis. The most recent classifi-

表 7-3　牙龈和牙周疾病分类（1999 国际研讨会）

Table 7-3 Classifications of gingival and periodontal diseases (International Workshop 1999)

牙 龈 疾 病	
牙菌斑性牙龈病	仅与牙菌斑有关的牙龈炎
	受全身因素影响的牙龈病
	受药物影响的牙龈病
	受营养不良影响的牙龈病
非菌斑性牙龈病损	特殊细菌引发的牙龈病
	病毒性牙龈病
	真菌性牙龈病
	遗传性的牙龈病损
	全身病的牙龈表现
	创伤性病损
	异物反应
	未明确者

牙 周 疾 病	
慢性牙周炎	局限型
	广泛型
侵袭性牙周炎	局限型
	广泛型
坏死性牙周病	坏死性溃疡性牙龈炎
	坏死性溃疡性牙周炎
	牙周脓肿
伴牙髓病变的牙周炎	
发育性或获得性异常	
反映全身疾病的牙周炎	血液疾病
	遗传疾病
	未明确者

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评价见 Chapple and Gilbert 2002。

该分类尝试将疾病与不同的病因、预后和治疗特点联系起来。慢性牙周炎（图 7-2）和侵袭性牙周炎（图 7-3）的区别见表 7-4。表 7-5 详细说明了牙周脓肿和根尖脓肿的区别。特别注意，在慢性牙周炎的治疗中并不推荐全身使用抗生素，但是在侵袭性牙周炎的治疗中抗生素一定会发挥作用。本书并不是讨论如何治疗最常见的牙周疾

cation resulting from the 1999 Illinois International Workshop for the Classification of Periodontal Diseases and Conditions is summarised in Table 7-3. A detailed appraisal of this system is discussed in Chapple and Gilbert 2002.

This classification attempts to relate disease to differing aetiologies, prognosis and treatment modalities. The difference between chronic (Fig 7-2) and aggressive (Fig 7-3) forms of periodontitis are summarised in Table 7-4 and Table 7-5 gives details of the differences between periodontal and periapi-cal abscesses. It is important to note that there is no indication to use systemic

表 7-4 慢性和侵袭性牙周炎主要特点对比

Table 7-4 Comparison of the main features of chronic and aggressive periodontitis

	侵袭性牙周炎（图 7-3）	慢性牙周炎（图 7-2）
男女比率	男女发病率相同	男性较多见
人群范围	少见（易感人群低于 5%）	常见（54% 的人群附着丧失 ≥ 4mm）
发病年龄	形成于混合牙列期、青春期和青年期	可能开始于少年，但是常常在 30 岁后才确诊
病变进展速度	组织迅速破坏	平均缓慢地发展伴随机暴发的方式
微生物	特殊的牙周病菌，包括：伴放线杆菌、牙龈卟啉菌、巨核梭杆菌属和螺旋体	混合的非特异性菌落，革兰阴性菌比例上升；一些特异性的微生物为：牙龈卟啉菌、福赛类杆菌、齿垢密螺旋体
宿主防御	不足或过高的炎症反应都有报道	过高的炎症/免疫反应，导致组织的破坏
口腔卫生	良好	疾病与口腔卫生不良相关
控制	结合使用全身抗生素可能有益	单纯去除微生物效果良好；没有使用全身性抗生素的指征

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图7-2 口腔卫生不良导致的慢性牙周炎

Fig 7-2 Chronic periodontitis associated with poor levels of oral hygiene





图7-3 a和b 侵袭性牙周炎的临床和X线特点

Fig 7-3 a and b Radiographic and clinical features of aggressive periodontitis

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表 7-5 侧壁牙周脓肿和根尖周脓肿的比较
Table 7-5 Differences between lateral periodontal and periapical abscess

	侧壁的牙周脓肿	根尖周脓肿
牙齿活力	通常有活力	没有活力；注意，多根牙有时有反应
疼痛	比根尖脓肿轻微	非常严重；通常干扰睡眠
引流通道	牙周袋引流	通常位于根尖，有时位于牙龈边缘
水肿	位于附着龈	位于根尖部位
最柔软区域	位于附着龈	位于根尖部位
时间变化	通常水肿先于疼痛	通常疼痛先于水肿
叩诊疼痛	通常不是很痛，侧向更明显	根尖向的压力很敏感
牙周袋	通常有牙周袋	不一定有
牙外伤史或充填史	不一定有	通常有
先前牙髓炎症状	不一定	常常有
X 线表现	可见边缘骨丧失	如果症状出现 10 天以上可能在根尖区 X 线透射

病，这方面内容将在本系列丛书的第三本《成功的牙周治疗：非手术方法》一书中谈及。

antimicrobial drugs in the management of chronic periodontitis, but they do have a role in the management of aggressive disease. It is not the remit of this book to discuss the clinical management of the most common periodontal diseases; this will be covered in the third book of the present series, *Successful Periodontal Therapy: A Non-Surgical Approach*.

初级治疗部门的牙周治疗

Periodontal Treatment in the Primary Care Sector

英国牙周病学协会发表过一篇文章《转诊政策和治疗参数（2001）》，文中对经基本牙周情况检查后诊断为牙

The British Society of Periodontology has issued a policy document *Referral Policy and Parameters of Care (2001)*

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周炎的患者的转诊原则进行了概述。患者是前往专科医师处还是转至医院会诊依赖于以下几个方面：

- 牙科全科医师治疗牙周炎病人的知识和能力，这种知识和能力对于不同医生相差很大。
- 患者寻求专科医师的观点和治疗的意愿及动机。
- 患者的年龄和全身健康状况。
- 需要进行治疗的复杂性。
- 牙周炎类型的确诊。
- 邻近专科医师的能力。

1998 年，一份国际成人牙齿健康调查统计数据表明，73% 仍有牙齿的成年人患有不同程度的牙石，牙周袋深度≥4mm的占 54%。牙周疾病流行的严重性说明大部分的患者都必须在初级治疗部门进行治疗。牙科全科医师需要掌握的技能有：

- 通过对患者进行检查，选择合适的 X 线检查方法。
- 作出诊断，制定一个有明确治疗目标的治疗计划。
- 提供非手术治疗（与牙科临床技师合作）。
- 监测患者对早期治疗的反应。

which outlines a referral policy guide-line for patients with a diagnosis of periodontitis dependent upon the findings of a BPE screen. The decision to refer patients to either specialist practitioners or hospital consultants is dependent upon the:

- GDP's knowledge and ability to treat periodontal patients, which may vary considerably
- patient's motivation to seek a specialist opinion or treatment
- age and general health of the patient
- complexity of treatment required
- form of periodontitis diagnosed
- proximity of local specialist services.

In the 1998 Office for National Statistics Adult Dental Health Survey, 73% of dentate adults had some calculus and 54% periodontal pocketing of 4 mm or more. The prevalence of periodontal disease is such that most patients Will need to be managed in a primary care setting. The general dental pracitioner will need to be skilled in:

- The screening of patients, and selection of relevant radiographs.
- Reaching a diagnosis and formulating a treatment plan with defined therapeutic goals.
- The provision of non-surgical care (in conjunction with the dental hygienist).
- Monitoring the response to initial

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每个患者牙周疾病的进展速度各不相同。在评估每个患者疾病的进展状况时必须考虑年龄和其他危险因素如全身健康情况、吸烟情况和口腔卫生情况等的影响。应给患者清晰地解释他们的口腔状况，并使他们能够很好地理解。牙科X线检查、口镜和探针可以用来辅助展示患者口内当前牙周的破坏情况。

必须让患者清楚地意识到不接受治疗的后果。重要的是要记住不是每个患者都有可能或有意愿开始进行一系列的牙周治疗。然而，应该对每个患者解释各种治疗方法，这样他们就可以知情选择，同时要把知情过程记录于临床病历中。某些原因，如全身系统性疾病、菌斑控制不良或是患者缺乏主动性，也会让一些本来能够控制疾病的合理治疗无效或疗效不明显。

牙周病的治疗基本上依赖于患者的主动性、清洁牙齿的灵巧性以及他们的依从性，所以治疗效果难以预测。实际上，在一些病例中，由于患者疾病的严重性、广泛性、年龄和较差的健康状况，他们可能只能选择减缓但并不

therapy.

The rate of progression of periodontal disease varies in each person. For each individual patient an assessment of the rate of disease progression must be made in relation to age and other associated risk factors, e.g. general health, smoking and oral hygiene practices. The patient should be given a clear explanation of their oral status in terms that they can understand. Dental radiographs, hand mirrors and probes can be used to demonstrate the presence of periodontal breakdown in the patient's mouth.

The consequences of failing to accept treatment must be made clear. It is important to remember that not every patient will be capable of, or motivated to, embark upon a course of periodontal treatment. Nevertheless, every patient should have treatment options explained so that they can exercise an informed choice and information given must be documented in their clinical records. For reasons of systemic disease or problems with plaque control or lack of motivation, appropriate treatment to control disease may be deferred or declined.

The treatment of periodontitis is fundamentally dependent upon the patient's motivation, manual dexterity and compliance. Thus the outcome of care may be difficult to predict. Indeed in some cases, because of severity and extent of disease,

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能控制疾病发展的治疗方案。在这些病例中，仅仅进行口腔卫生状况的改善，甚至像去除龈上牙石这样的基本治疗已是最终目的。

保存所有有关牙周评价的手写记录是一种很好的临床方法（牙防组织推荐）。开业医师尤其应该记录牙周袋探诊深度、附着水平、出血位点、菌斑指数和松动度。由于患者的依从性和愈合情况各不相同，因此有必要监测治疗后的个体反应并记录结果。请注意牙周治疗的目的是提供一个合适的牙列以满足患者个人对美观和功能的要求。治疗的最终目的依具体病例而定。

如果牙科全科医师和牙科临床技师在初级治疗部门中进行的牙周基础治疗有效，那么一旦牙周疾病得到控制，就可以开始进行维护治疗了。

部分患者牙周治疗的效果极差或者需要进行复杂的治疗时，需要由口腔全科医师来选择和确定患者是否需要转诊进行专科治疗。在初级治疗部门的病因治疗结束后，应咨询专科医师的意见。如果口腔卫生良好的患者

age or poor health of the patient, a treatment that will reduce but not control disease progression may be selected. In these cases, initial therapy to improve oral hygiene and remove supragingival calculus may be the end-point.

It is good clinical practice (and a recommendation of the dental defence organisations) that a written record of all periodontal assessments is kept. In particular, practitioners should record probing pocket depths, attachment levels, bleeding sites, plaque scores and mobility. Patient compliance and healing are variable and so it is essential to monitor their individual response to therapy and record findings. Remember that the objective of periodontal care is to provide an appropriate dentition to meet the individual patient's aesthetic and functional needs. The end-point of treatment has to be selected for each case.

Initial periodontal therapy, as provided in a primary care setting by general dental practitioners and dental hygienists, is effective provided that, once periodontal disease is controlled, a supportive care programme is arranged.

There are some patients in whom either the outcome of periodontal therapy is inexplicably poor or complex therapy is indicated. It is the GDP who can identify and select those patients who would benefit from referral for specialist care. A spe-

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在牙周非手术治疗之后仍有活动性牙周袋存在（图7-4），则需要转诊以进行复杂的牙周治疗如牙周手术治疗。慢性牙周炎患者如果同时口腔卫生较差，则在转诊给专科医师之前需要进行进一步的非手术治疗并确保能主动熟练地进行菌斑控制。请注意患者有权通过转诊听取其他医师的观点。

cialist opinion should be sought after completion of cause-related therapy in a practice setting. Where active periodontal pocketing persists after non-surgical periodontal therapy (Fig 7-4) in a patient with good oral hygiene, it is appropriate to refer for the provision of complex periodontal therapy such as periodontal surgery. Patients with inadequate oral hygiene and a diagnosis of chronic periodontitis should receive further non-surgical treatment and demonstrate sufficient motivation and manual dexterity to improve plaque control prior to warranting specialist referral. However, remember that all patients have a "right" to a second opinion through referral.

转诊给专科医师的选择标准

以下患者容易患严重的牙周疾病，或是经过治疗很可能会引起并发症，故确诊牙周病后及早转诊以听取专科

Selection criteria for specialist referral

The following groups of patients are at risk of severe periodontal disease or complications arising from therapy. Early re-



图7-4 尽管口腔卫生良好，22深牙周袋且探诊出血，显示活动性牙周炎的存在

Fig 7-4 Despite good oral hygiene the deep periodontal pocket 22 shows bleeding after probing indicative of active periodontitis

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医师的意见才可能是恰当的。

1. 患者本身患有能诱发牙周病的疾病，如循环系统的嗜中性粒细胞减少症、器官移植伴药物性牙龈增生、难以控制的糖尿病、免疫抑制和肾脏衰竭或肾移植（图 7-5）。

2. 患者所处的疾病状态使之在牙科治疗后极易引发并发症，如抗凝剂治疗、心瓣膜修复、风湿热前期或感染性心内膜炎、严重的心脏杂音和免疫抑制等（图 7-6）。

ferral for specialist opinion following detection of periodontal disease may be appropriate:

1. Patients with medical conditions predisposing to periodontal disease e.g. cyclic neutropenia, organ transplants with drug-induced overgrowth, poorly controlled diabetes, immunosupression and renal failure or transplant (Fig 7-5).

2. Patients at special risk of complications arising from dental treatment, e.g. those on anticoagulant therapy, those with prosthetic heart valves, previous rheumatic fever/infective endocarditis or significant



图7-5 肾移植患者因环孢素A引起的牙龈增生

Fig 7-5 Gingival overgrowth attributed to ciclosporin in a renal transplant patient



图7-6 HIV阳性患者的活动性牙周炎

Fig 7-6 Active periodontitis in an HIV positive patient

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3. 诊断为侵袭性牙周炎的患者，如局限性侵袭性牙周炎或广泛性侵袭性牙周炎的患者（图 7-7）。

4. 需进行复杂的修复治疗的牙周炎患者，如牙周牙髓联合病变（图 7-8）、牙周和正畸联合治疗的患者，计划进行固定修复和种植修复的患者，以及可能需要进行牙周手术的患者。

heart murmur and immunosupression (Fig 7-6).

3. Patients with a diagnosis of aggressive periodontitis, e.g. localised aggressive periodontitis or generalised aggressive periodontitis (Fig 7-7).

4. Complex restorative treatment planning for periodontal cases, e.g. combined periodontal and endodontic lesions (Fig 7-8), combined periodontal and orthodontic treatment, planning of fixed prosthodontics

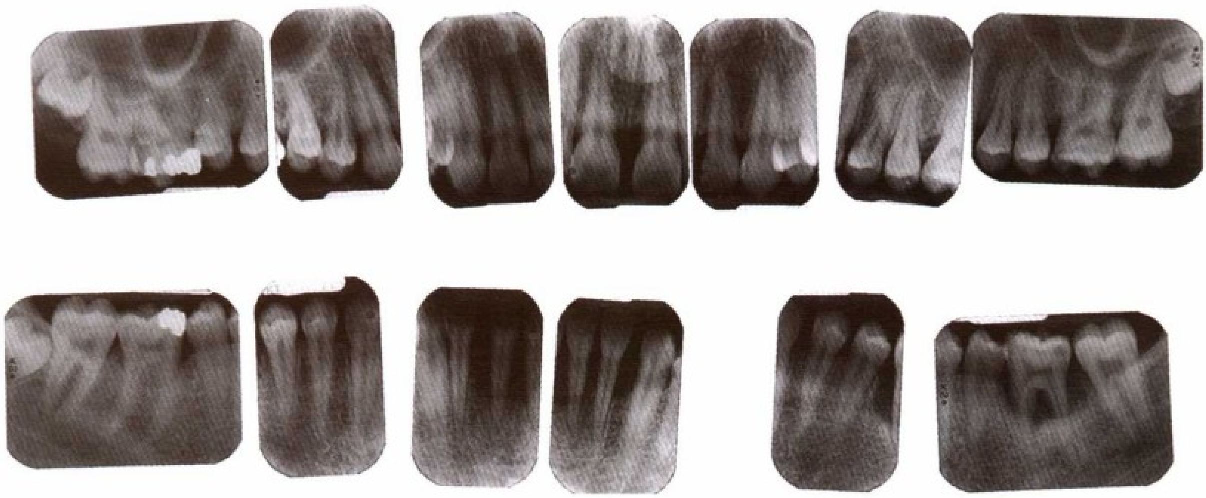


图 7-7 侵袭性牙周炎典型的射线特征

Fig 7-7 Typical radiographic features of aggressive periodontitis



图 7-8 射线显示牙周－牙髓联合病变

Fig 7-8 Radiograph showing a combined periodontal-endodontic lesion

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在英国牙周病学协会的帮助下，英国皇家外科学院临床评审委员会为牙周病治疗效果的评估提出了一个治疗评估方案。这个方案增加了与牙周病治疗相关的病因以及明显影响临床治疗的简要病史这两个要素，使复杂的评估过程简单化。这本质上是一个有关复杂程度的指标，它没有考虑到患者的主动性或治疗中的优先原则。复杂程度和相关病因的选择原则列于表7-6中。可依据复杂程度指标选择实施治疗计划的最佳地点。有可能选择不明确的是有关任一六牙位区段的BPE都为4分的吸烟者的处理方法。近来有

and implants, and potential need for periodontal surgery.

The Clinical Audit Committee of the Royal College of Surgeons of England, with help from the British Society of Periodontology, produced an index of treatment needs for periodontal treatment assessment. This codes complexity in a simplistic manner with the addition of a list of modifying factors that are relevant to periodontal treatment and an outline of medical histories that may significantly influence clinical management. It is in essence a complexity index, which does not take into consideration either aspects of patient motivation or criteria for prioritisation of treatment.

表 7-6 牙周病治疗的复杂性

Table 7-6 Complexities of periodontal treatment codes

标　准	复 杂 程 度
相关病因	病因仅从一方面增加复杂程度 多种病因不能叠加
既往病史	重要病史只从一个方面增加复杂程度
任何一个六牙位区段 BPE 得分 1～3 分	复杂度 1
任何一个六牙位区段BPE得分4分，包括牙周组织的手术	复杂度 2
骨整合种植体手术；增生牙周组织的手术；在任何一个六牙位区段BPE得分4分，加上以下一个或一个以上的因素：35 岁以下的患者；每天吸烟10支以上者；直接影响牙周组织的医学因素；有害的根面形态；一年附着丧失大于 2mm 的快速牙周破坏者	复杂度 3

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研究表明，吸烟者对牙周非手术治疗的治疗反应较差，即使特定位点的手术治疗，也达不到预期的临床效果。复杂程度相应的推荐治疗如下：

- 复杂度1由全科医师治疗。
- 复杂度2由全科医师治疗或转诊进行治疗。
- 复杂度3大多需要转诊至牙周病专科医师处。

当然该转诊过程也不可能如此绝对。作为复杂治疗计划中不可分割的一部分，有时非常简单的牙周治疗也需要由专科医师来操作。其他情况下，当地的治疗能力和预约就诊也将导致转诊的减少。

牙周非手术治疗

病因治疗的目的是消除和预防沉

The criteria used to select the complexity grade and relevant modifying factors are outlined in Table 7-6. The complexity index is a useful tool for providing guidance about the best environment for treatment to be performed, according to its complexity. One area of possible ambiguity is the management of smokers with a BPE of 4 in any sextant. Recent research has shown that the response of smokers to non-surgical periodontal treatment is impaired and surgical treatment in particular will not produce a sustained clinical benefit. The recommended outcome of the complexity rating is:

- Complexity 1 cases may be treated in general practice.
- Complexity 2 cases can be either treated by the general practitioner or referred.
- Complexity 3 cases are mostly referred to a specialist periodontist.

It is not possible to be absolute in determining strict referral guidelines. Sometimes apparently simple periodontal treatment may need to be provided by specialists as an integral part of a more complex treatment plan. In other situations, local service demands and contracts may result in a referral being declined.

Non-surgical periodontal therapy

The objective of "cause-related therapy"

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积于牙齿和牙根表面的菌斑。牙周疾病侵犯的部位病变程度不同，因此在治疗开始前详细记录牙周病变的部位和严重程度是必要的。图3-7到3-10和图 7-9 列出了牙周治疗中使用到的图表范本，也可以使用电子版的图表。

is elimination and prevention of reformation of bacterial deposits on tooth and root surfaces. Periodontal disease affects specific sites to varying degrees and so it is essential to record in detail the location and severity of periodontal disease before commencing treatment. Examples of periodontal charting schemes are illustrated in Figs 3-7 to 3-10, and 7-9. Computer-generated charting systems are also available.

在组织愈合一段时期后（至少6～12周），治疗图表可以精确地评估患者对治疗的反应并长期监控疾病的进展情况。此外，图表有助于患者发挥主动性，还可用于开展宣传教育。病因治疗或牙周病的基础治疗包括：

Healing after periodontal therapy may *continue for up to six months*. Charting after a suitable period for healing has elapsed (6–12 weeks minimum) permits an accurate assessment of a patient's response to therapy and long-term monitoring of the disease process. In addition, charts can be used for individual patient motivation and education. Cause-related or initial periodontal therapy comprises:

- 调动患者的主动性。
- 口腔卫生宣教。
- 去除菌斑滞留因素。
- 龈上洁治。
- 龈下刮治。
- 根面平整。
- 调殆。
- 化学法控制菌斑（用于急性情况下）。

- Patient motivation.
- Oral health education.
- Removal of plaque retention factors.
- Supragingival scaling.
- *Subgingival scaling*.
- Root surface debridement.
- Occlusal equilibration.
- Chemical plaque control (for acute conditions).

口腔卫生宣教能够增强患者的主动性。一旦患者彻底理解了菌斑作为始动因子在龋病和牙周疾病发生发展中的作用，就应该对其进行后续的口

The oral health education of a patient underpins effective motivation. Once the patient fully understands the role of bacterial plaque as the causative agent in caries

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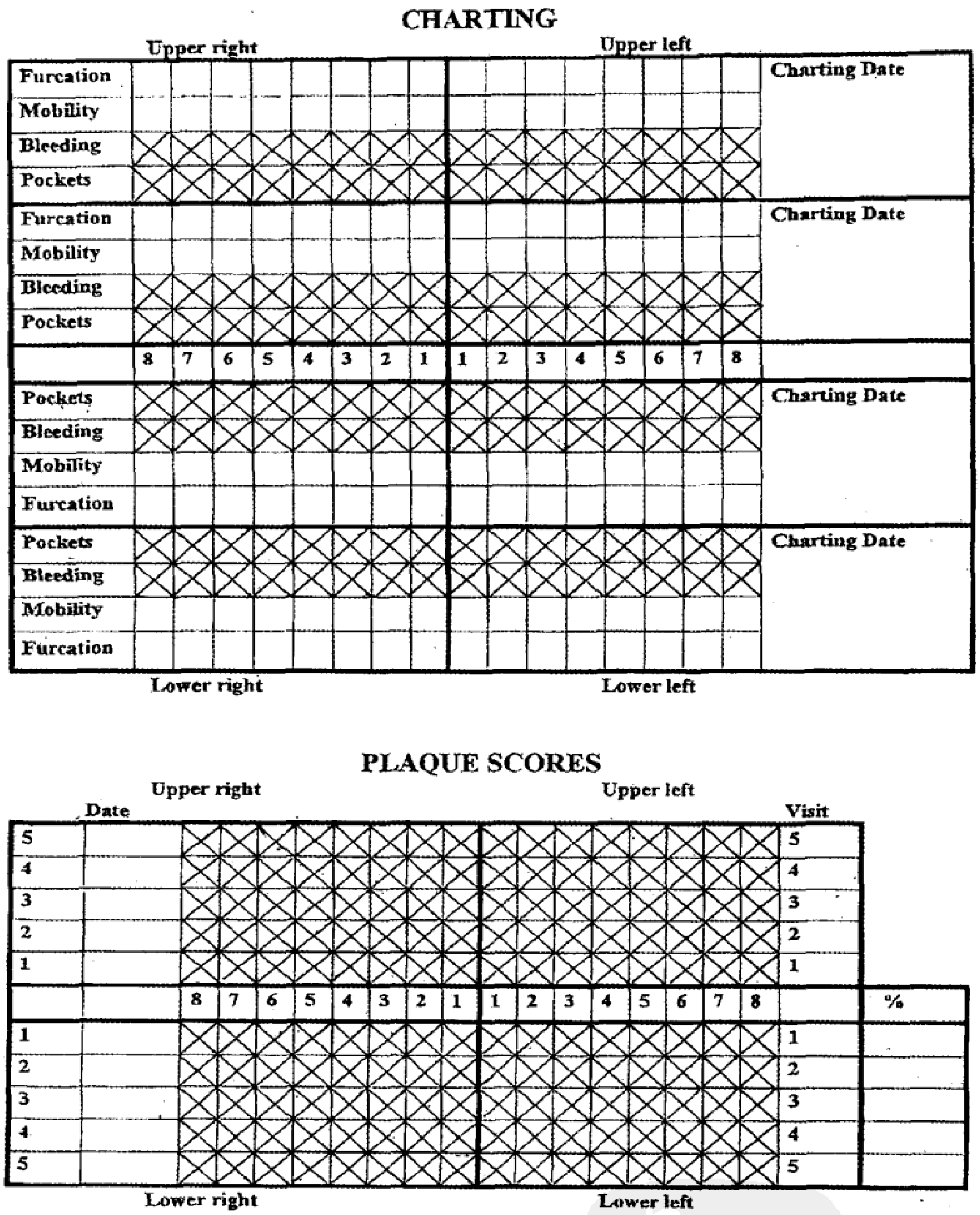
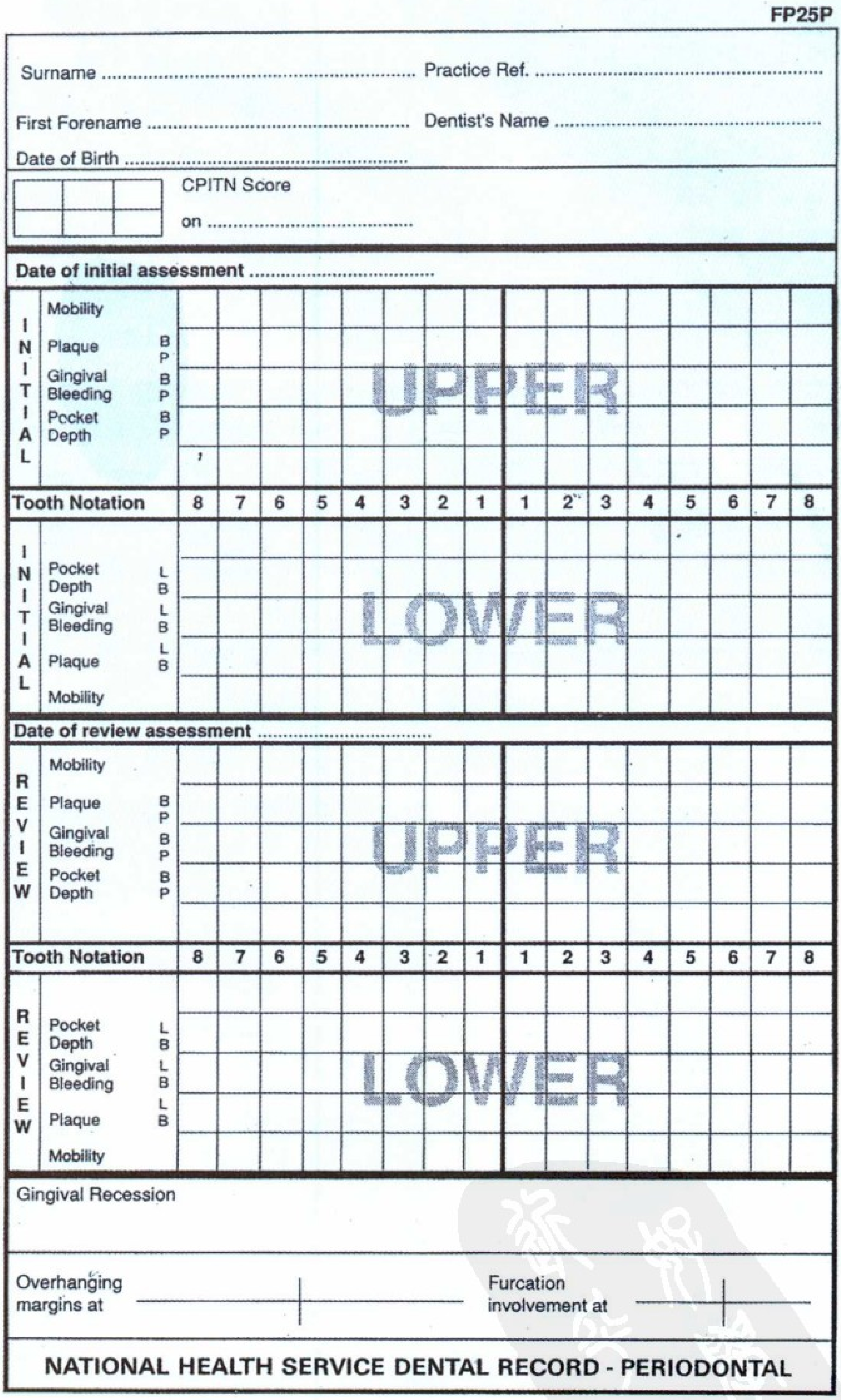


图 7-9a 记录牙周情况各项指标的图表范本

Fig 7-9 a Examples of charting systems available for recording periodontal indices

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FP25P

Surname .... Practice Ref. ....

First Forename .... Dentist's Name ....

Date of Birth ....

CPITN Score

on ....

Date of initial assessment ....

INITIAL																	
Mobility																	
Plaque	B																
	P																
Gingival Bleeding	B																
	P																
Pocket Depth	B																
	P																
UPPER																	
Tooth Notation		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
LOWER																	
Pocket Depth	L																
	B																
Gingival Bleeding	L																
	B																
Plaque	L																
	B																
Mobility																	

Date of review assessment ....

REVIEW																	
Mobility																	
Plaque	B																
	P																
Gingival Bleeding	B																
	P																
Pocket Depth	B																
	P																
UPPER																	
Tooth Notation		8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
LOWER																	
Pocket Depth	L																
	B																
Gingival Bleeding	L																
	B																
Plaque	L																
	B																
Mobility																	

Gingival Recession

Overhanging margins at

Furcation involvement at

NATIONAL HEALTH SERVICE DENTAL RECORD - PERIODONTAL

图 7-9b　需要对每个牙牙周袋的六个位点进行探诊

Fig 7-9 b　Six probing pocket depth measures are needed per tooth

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腔卫生指导，而口腔健康教育者或牙科临床技师正好能够提供这方面的指导。

and periodontal disease, subsequent oral hygiene instruction will have relevance. A dental health educator or dental hygienist can provide this phase of care.

菌斑滞留因素可能是先天性的（如牙列拥挤、发育沟、釉珠、结石），也可能是医源性的（第10章将详细介绍边缘不良或有悬突的修复体）。

Plaque retention factors may be natural (crowding, developmental grooves, enamel pearls, calculus) or iatrogenic (poor margins or overcontoured restorations as detailed in Chapter 10).

牙膏或漱口水能够通过释放化学物质控制菌斑。最有效的药物为洗必泰，但使用洗必泰漱口会出现味觉改变、色素沉积、牙石形成增加等问题。三氯生通过与多聚体结合而直接起作用，锌则可以有效抑制菌斑活性从而控制牙龈炎，但其不能用于控制牙周袋。牙周疾病相关的殆治疗将在第9章中介绍。

Either a dentifrice or mouth rinse may deliver chemical plaque control. The most effective agents contain chlorhexidine. Problems of altered taste sensation, staining and increased calculus formation may arise with chlorhexidine mouth rinse preparations. Triclosan presented in combination with a polymer designed to increase substantivity or zinc also provides effective antiplaque activity for the control of gingivitis but is ineffective in the management of periodontal pocketing. An account of occlusal therapy in relation to periodontal diseases is presented in Chapter 9.

过去，龈下刮治主要用于完全去除龈下牙石及菌斑，并形成光滑的牙根面。尽管已证实很难实现这一目标，但治疗仍然有效的。最近研究显示90%的牙周炎患者牙根面疏松的菌斑附着层上含有脂多糖（LPS或内毒素），这些菌斑附着层很容易去除。以下几种术语可用于描述牙周袋的机械处理方法，这包括：

Historically, subgingival instrumentation has been performed with the objective of total removal of subgingival deposits, leaving a smooth root surface. It has been shown that this is rarely achieved and yet periodontal therapy is effective. Recent studies have shown that 90% of the lipopolysaccharide (LPS or endotoxin) associated with periodontally involved root surfaces is

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• 龈下刮治——去除龈下牙石。

• 根面平整——去除龈下菌斑、牙石和坏死的牙骨质。

• 根面清创术——去除牙石和大量龈下非附着菌斑以利于牙周愈合。与根面平整相比，根面清创术的破坏性相对较小，它尽可能保留牙骨质，却不影响治疗效果。

矫正治疗

若想更详细地了解相关内容，请参考本系列丛书第三本中的相关章节(《成功的牙周治疗：非手术方法》)。能够遵循菌斑控制方法的患者可以考虑进行矫正治疗，矫正治疗包括：

• 余留活动性位点的进一步根面清创。

• 牙周牙髓联合病变的治疗。

found within the loosely adherent plaque layer and can be easily removed. Several terms are used to describe the treatment of pockets by mechanical therapy. These include:

• *Subgingival scaling* — the removal of subgingival calculus.

• *Root planing* — the removal of subgingival plaque, calculus and necrotic cementum.

• *Root surface debridement (or instrumentation)* — the removal of calculus and adequate subgingival loosely adherent plaque to facilitate periodontal healing. Root surface debridement is a less aggressive procedure than root planing and aims to preserve as much cementum as possible, without compromising therapeutic outcomes.

Corrective Therapy

For a more detailed account of this topic please refer to the third book in the present series (*Successful Periodontal Therapy: A Non-Surgical Approach*). A patient demonstrating compliance with plaque control may be considered for corrective therapy. This may comprise:

• Further root surface debridement in residual active sites.

• Management of combined periodontal and endodontic lesions.

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- 更换不良修复体。
- 局部义齿的应用。
- 骨整合种植体的植入和结构重建。
- 牙周手术。

在决定牙周手术治疗之前通常应先进行牙周基础治疗或病因治疗。通过彻底的根面处理，可改善患者的口腔卫生状况，但患有活动性牙周疾病（牙周袋深度增加和／或探诊出血增加）者，应考虑进行牙周手术。

当洁治和根面平整不能够有效清除病变时，需要进行牙周手术治疗。根面平整器械不能到达的部位有：

- 牙周袋深度＞5mm者。
- 比较宽大的根面。
- 根折时。
- 根面凹陷处。
- 根分叉处。
- 修复体龈下区域的不良边缘。

当患者自我菌斑控制不良时也可以进行牙周手术。齿龈交界区的形态在很大程度上影响着患者的菌斑控制，即使是一位主动性良好，清洁技巧高超的患者也不例外，特别是在牙龈增生、纤维退形性病变、组织结节增生部

- Replacement of defective restorations.
- Provision of partial dentures.
- Placement and reconstruction of osseointegrated implants.
- Periodontal surgery.

Initial or cause-related therapy is usually performed before decisions regarding the use of periodontal surgery can be taken. Patients who achieve good standards of oral hygiene after thorough root surface debridement but have periodontal disease activity (increasing pocket depths and/or bleeding on probing) are potential candidates for periodontal surgery.

Periodontal surgery may be indicated where there is impaired access for scaling and root surface debridement. The ability to perform adequate root surface instrumentation is reduced:

- in deeper (>5 mm) periodontal pockets
- on wider tooth surfaces
- by the presence of root fissures
- by the presence of root concavities
- by furcations
- by the presence of faulty margins on subgingival restorations.

Surgery also has a role where access is impaired for self-performed plaque control. The morphology of the dentogingival area has a significant affect on even a well motivated and manually dexterous patient's ability to achieve plaque control, in particu-

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位。系带附丽过高和牙齿间的凹陷都增加了菌斑控制的难度。因此牙周手术适用于：

- 经过刮治和根面处理后仍然存在病变者。
- 建立良好的牙龈外形以利于在家中自我控制菌斑。
- 通过切除组织、形成长上皮结合和重建新附着使牙周袋变浅。
- 修整龈缘位置，使其位于易于滞留菌斑的修复体的根方。
- 增加临床牙冠的长度以使修复体边缘位于龈上（冠延长术）。

牙周手术也有禁忌证。适应证的选择对于长久地维护患者的牙周健康很重要。患者的依从性对于确保最佳的术后愈合十分重要。在病因相关的治疗阶段，一个不能够或不主动配合的患者是不能进行手术治疗的，因为即使手术治疗能获得短期疗效，也不可避免地将再次发生牙周组织的破坏。吸烟不仅是牙周疾病的主要风险因素，还会降低牙周非手术或手术治疗的疗效。与非吸烟患者相比，吸烟患者牙周手术后牙周袋深度变浅及临床附着获

lar in areas of extensive gingival overgrowth and fibrous retromolar or tuberosity tissue. High fraenal attachments and interdental craters can create significant plaque control problems. Periodontal surgery may therefore be used to:

- gain access for thorough scaling and root surface debridement
- establish a gingival morphology conducive to good plaque control at home
- reduce pocket depths either by tissue removal, formation of a long junctional epithelium or regeneration of new connective tissue attachment
- shift the gingival margin such that it lies apical to plaque retaining restorations
- increase clinical crown length to permit preparation of retentive indirect restorations with supragingival margins (crown lengthening).

There are contraindications to periodontal surgery. Case selection is of fundamental importance in achieving a long-term improvement in the periodontal health of the patient. Patient compliance is essential to ensure optimal postoperative care. A patient who is not able or motivated to cooperate during the initial phase of cause-related therapy should not proceed to surgery, since the outcome, even if showing short-term gain, will be compromised as periodontal breakdown inevitably recurs.

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得会更少。据估计戒烟后一年，牙周组织仍然难以恢复血供和愈合。

Smoking is not only a major risk factor for periodontal disease progression but has also been shown to impair healing after both non-surgical and surgical therapy. In comparison to non-smokers, less pocket depth reduction and smaller improvements in clinical attachment gain are observed after surgical therapy in smokers. It has been estimated that tissue blood supply and healing may not recover for up to one year after smoking cessation is commenced.

当然也没有绝对的禁忌证。然而，对患有其他疾病如心血管疾病，包括高血压、心绞痛、心肌梗死、溶栓治疗、细菌性心内膜炎和器官移植的患者（这些患者在抗高血压治疗的同时常伴发有牙龈增生），在安排手术治疗时应特别小心。

There are few other absolute contraindications; however, care must be taken in planning surgery for medically compromised patients, e.g. for those with cardiovascular disease including hypertension, angina pectoris, myocardial infarct, anticoagulation treatment, risk of bacterial endocarditis and organ transplant patients in whom antihypertensive therapy is associated with gingival overgrowth.

牙周手术可分为以下几类：

1. 创造入口手术：为器械深入治疗提供视野或技术入口。

2. 切除手术：切除增生牙龈处过度的软组织或在处理牙周袋时重新确定龈边缘的根向位置。

3. 再生手术：尽管这种手术的预期效果较难预料，但据报道这种手术可以获得牙周附着的再生，如牙骨质、

Periodontal surgery may be classified as:

1. *Access surgery* — designed to provide visual and technical access for thorough debridement in deep sites.
2. *Resective surgery* — for removal of excess soft tissue in gingival overgrowth or apical relocation of gingival margins in the management of pocketing.
3. *Regenerative surgery* — although less predictable, this form of surgery is reported to regenerate the periodon-

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牙周膜和牙槽骨。

4. 牙周整形手术：该手术目的是纠正膜龈缺陷，如由移植或类似手术修复因局部牙龈退缩引起的缺陷（图 7-10）。

tal attachment complex, i.e. cementum, periodontal ligament and bone.

4. *Periodontal plastic surgery* — which aims to correct mucogingival defects, e.g. clefts resulting from localised gingival recession via grafting or similar procedures (Fig 7-10).

抗菌辅助治疗

关于这方面的内容将在本系列丛书的第三本中详细介绍。这里作简要介绍：

慢性牙周炎治疗时没有必要按常规全身应用抗生素。卫生部医学顾问常委会提醒：牙科医生应谨慎使用抗生素，理由是抗生素能够导致细菌耐药性的增加。葡萄球菌耐药性的增加主要是由于滥用抗生素所致。吸烟的患者使用抗生素辅助治疗的效果较差。牙周治疗中抗菌辅助治疗的疗效取决于是否彻底进行机械性清创，因为从理论上讲，清创会破坏龈下菌斑生物

Adjunctive antimicrobial therapy

For a more detailed account of this topic see the third book in the present series. Briefly:

There is no indication for the regular or routine use of systemic antibiotics in the management of chronic periodontal diseases. The Standing Medical Advisory Committee of the Department of Health advocates caution in the use of antimicrobials by dental practitioners due to risk of increased drug resistance of bacteria throughout the population in general. The increase in methicillin-resistant *Staphylo-*

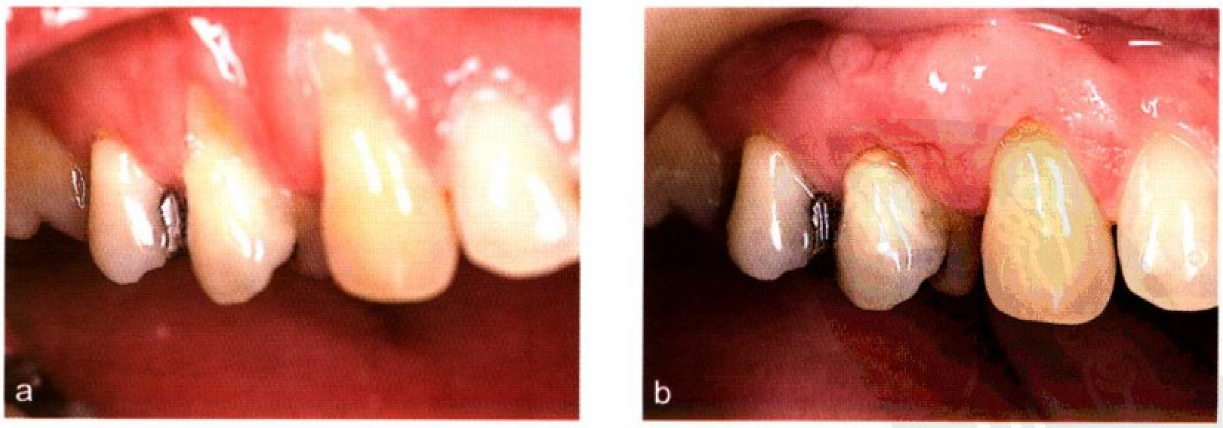


图 7-10 牙龈退缩：a. 术前；b. 术后 – 结缔组织移植

Fig 7-10 Gingival recession (a) pre- and (b) post-connective tissue grafting

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膜的结构。

coccus aureus (MRSA) can be attributed largely to overuse of antimicrobial drugs. Patients who smoke will benefit less from the adjunctive use of antibiotics. The efficacy of adjunctive antibiotics in periodontal therapy is dependent upon thorough mechanical debridement, which will by definition disrupt the biofilm structure of subgingival plaque.

已有证据显示全身应用抗生素(假设它们作为机械治疗的辅助治疗)有助于提高侵袭性牙周炎的临床治疗效果。有报导称由于存在大量特殊的牙周病原体，侵袭性牙周炎可全身应用抗生素治疗。

There is evidence that systemic antibiotics (provided they are used as an adjunct to mechanical therapy) can enhance the clinical outcome for aggressive periodontitis. Aggressive periodontal disease, in which there is reported to be an increased prevalence of specific periodontal pathogens, responds to systemic antimicrobial therapy.

口腔器官包括舌、咽喉、口底、腺体等都可能驻藏病原体，因此有必要使用全身应用抗生素来净化整个口腔环境，防止病菌的重新植入。四环素可以减少人类中性多形核细胞胶原酶的产生，因此四环素可以用来降低由于过强的宿主反应而导致的组织破坏。

Oral sites including the tongue, fauces, floor of mouth and saliva will harbour periodontal pathogens; hence the need for a systemic drug to “cleanse” the whole oral environment and prevent recolonisation of pockets with a pathogenic flora. Also, the tetracycline drugs will reduce collagenase production by the patient’s polymorphonuclear leucocytes; hence reducing the potential for tissue destruction by an over-exuberant host response.

局部应用抗生素可增加牙周袋内的药物水平。这些药物主要局部应用于已诊断为慢性牙周炎的非活动性位点，但作用效果还不确定。局部药物仅适用于口腔卫生良好且反复机械治疗

Topical antimicrobials are designed to produce high drug levels within the periodontal pocket. They are intended for use in local, non-responding sites where a diagnosis of chronic periodontitis has been

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无法愈合的患者。这将在本系列丛书的第三本中详细讨论。

made. The efficacy of such preparations is questionable. They should only be considered if patients are achieving an excellent standard of oral hygiene and the site has failed to heal despite repeated mechanical therapy. These are discussed in more detail in the third book in the present series.

监　控

考虑到对牙周治疗反应的个体差异性，牙周治疗的效果也是难以预测的。因此，有必要同时监测患者口腔卫生维护的依从性和组织对治疗的反应。依从性的最佳监测方法是检测菌斑和牙龈指数以及牙石、菌斑的形成情况。组织反应情况可通过记录临床附着水平、牙周袋探诊深度、探诊出血情况和牙龈退缩情况来监测。与治疗前的记录相比较就可以了解愈合情况了。

重新评估至少要在根面治疗结束6周后进行。临床状态的改善至少要在传统的非手术治疗结束后6个月才可发现。任何牙周手术治疗或牙周非手术治疗带来的改善都必须由良好的支持治疗（维持）来维护。

Monitoring

Individual responses to periodontal therapy vary considerably and are difficult to predict. It is essential therefore to monitor both the patient's compliance with oral hygiene techniques and the tissue response to therapy. Compliance is best monitored using plaque and gingival indices, and observing calculus and stain reformation. Tissue response can be assessed using clinical attachment levels, probing pocket depths, bleeding on probing and the recording of recession. Comparison with pretreatment records will demonstrate the healing response.

At least six weeks should pass after root surface instrumentation before reassessment takes place. Indeed, improvements in clinical status may continue for up to six months after conventional non-surgical therapy. Any clinical improvement following either surgical or non-surgical periodontal therapy can only be sustained within a well-planned supportive care (maintenance) programme.

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临床相关要点

- 牙科全科医师有责任检查和监督牙周炎病人。
- 可接受的最简单的检查是基本牙周情况检查(临床评价和恰当的射线检查)。
- 明确牙周诊断并记录在案。
- 牙周病一经确诊就应该制定明确的治疗计划。
- 应及时告知患者有关疾病的诊断、治疗计划和预后。
- 有必要监测治疗反应。
- 时刻完整记录临床检查情况,尤其应记录牙周指数和根据口腔卫生状况和戒烟情况所提出的建议。
- 不要低估长期牙周维护的必要性,患者应该了解到他们在接受牙周治疗的同时就承诺终生进行牙周维护。

Key Points of Clinical Relevance

- The GDP has a responsibility to screen and monitor patients for periodontal diseases.
- The minimum screening examination acceptable is a BPE (a clinical assessment with appropriate radiographic examination).
- A periodontal diagnosis should be made and documented in the notes.
- Where disease is detected a treatment plan should be instituted with clear therapeutic goals.
- Patients must always be fully informed of the diagnosis, treatment options and prognosis.
- It is essential to monitor the response to therapy.
- Always keep full records in the clinical notes, particularly taking care to record periodontal indices and advice given regarding oral hygiene and smoking cessation.
- Do not underestimate the need for long-term periodontal maintenance; patients must be educated to appreciate that they are making a life-long commitment when accepting periodontal treatment.

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拓展阅读

Further Reading

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第 8 章 正畸治疗与牙周健康

Orthodontics and Periodontal Health

目　的

本章内容旨在研究错𬌗与健康和疾病状态下牙周状况之间的关系，并进一步确认进行正畸治疗可能会给牙周健康带来的潜在危险性。

Aim

This chapter aims to consider the relationship between malocclusion and periodontal health and disease states and to identify the potential risks to periodontal health that orthodontic treatment may introduce.

要　点

在本章的最后，开业医师应该能够鉴别哪些患者的正畸矫治会对其牙周健康造成危害，并能够熟练地掌握处理这些病例的各种方法。理解这些概念将有助于更好地进行牙周情况的检查和正畸治疗，并且能够正确地选择适合进行正畸治疗的牙周炎患者。

Outcome

At the end of this chapter the practitioner should be able to identify patients in whom orthodontic treatment may be a risk to their periodontal health and be familiar with options for managing such cases. Understanding such concepts should promote good practice in the periodontal screening and management of orthodontic patients and enable the appropriate selection of periodontal patients suitable for orthodontic management.

引　言

当考虑患者是否适合进行正畸治疗时，开业医师需要思考以下问题：

Introduction

When considering the suitability of a patient for orthodontic treatment, the prac-

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• 错殆畸形是否导致牙周炎？

• 正畸治疗是否会破坏牙周组织？

• 正畸治疗能否用于治疗因牙周支持组织的减少而造成的牙齿漂移？

错殆畸形是引起牙周炎的危险因素

"正常殆"这个概念并不是意味着必须要有一个完美的Ⅰ类殆关系，同时，在非疾病状态下行使功能的殆也可能具有错殆畸形的特征，但却仍能适应神经肌肉的调节作用，这也可以称为正常殆。

在英国，据估计60%~75%的成年人患有错殆畸形。目前，正畸治疗中成年人约占15%，而这些成年患者中只有不到15%的人将患有严重的牙周炎。因此，大多数错殆畸形的成年患者是不会发生牙周疾病的。然而，仍有一部分成年人同时患有错殆畸形和牙周炎两种疾病，在牙周组织状况还处于不稳定的情况下接受正畸治疗，将产生灾难性的后果。比较有无咬殆早接触时的牙周组织状况可以发现，两种情况下牙周组织状况是一样的，这就说明错殆畸形并不是牙周袋形成

titioner should consider the following questions:

- Does a malocclusion cause periodontitis?
- Can orthodontic treatment damage the periodontal tissues?
- Can orthodontic treatment be considered to manage drifting that has resulted from reduced periodontal support?

Malocclusion as a Risk Factor for Periodontitis

The concept of a "normal occlusion" does not necessarily mean a perfect Class I occlusion. Any occlusion which functions in the absence of disease, but which may also have features of malocclusion that are adequately accommodated by neuromuscular adaptation, is considered normal.

It has been estimated that 60%–75% of adults in the UK have a malocclusion. Currently some 15% of orthodontic treatment is provided for adults and yet less than 15% of the population will present with severe periodontitis. Therefore a large number of adults with malocclusion appear to be free from periodontal disease. However, a proportion of adults will have both malocclusion and periodontitis and commencing orthodontic therapy in the presence of an unstable periodontium is a recipe for disaster. When the status of the periodon-

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的始发因素。

与牙列拥挤错殆现象相比，口腔卫生状况是预测将来可能发生牙周炎的更重要因素。不管咬合关系如何，良好的口腔卫生将会在最大程度上降低牙周炎发生的可能性（图8-1）。如果口腔卫生状况不良，那么即使接受正畸治疗也无法改善卫生状况，因此也就不能降低牙周疾病发生的可能性（图8-2）。对于口腔卫生状况尚可的患

tium is compared in teeth with and without premature occlusal contacts, no differences are found. This is evidence to suggest that malocclusion is not a primary factor in the development of a periodontal pocket.

Oral hygiene standards are a significant factor in predicting future risk of periodontitis rather than the presence of crowding and malocclusion. Where oral hygiene is good there is a minimal increase in the risk of periodontitis regardless of occlusal relationships (Fig 8-1). If oral hygiene is poor, correction of tooth alignment will not improve oral hygiene and therefore will not



图8-1 临床幻灯显示一错殆的患者，口腔卫生良好，因而牙周组织很健康

Fig 8-1 This clinical slide illustrates a patient with malocclusion. There is good oral hygiene and as a result the periodontal tissues are healthy



图8-2 尽管患者咬殆关系良好，但由于口腔卫生不良仍有牙周组织的破坏

Fig 8-2 Despite a good occlusal form this patient with poor oral hygiene shows features of periodontal breakdown.

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者，由于矫正了后牙区牙列拥挤状况，口腔卫生得以改善，因而减少了产生牙周炎的可能性。

reduce the incidence of periodontal diseases (Fig 8-2). For patients with average oral hygiene, correction of crowding in the posterior segments may reduce the risk of periodontitis by facilitating better oral hygiene.

牙列拥挤导致龈上菌斑数量的增加并提高了龈下菌斑中潜在的牙周病原菌的水平。错殆畸形的矫正有助于改善口腔卫生状况从而减少菌斑的堆积量，同时又由于菌斑堆积量的减少降低了发生牙周炎的可能性。但是，对于遗传性易感染牙周炎的患者来说，需要记住的是错殆畸形的矫正也无法改变他们这种因遗传因素而导致的牙周骨丧失。

Crowded sites harbour increased quantities of supragingival plaque and raised levels of putative periodontal pathogens in subgingival locations. Correction of the malocclusion may, however, reduce levels of plaque accumulation by facilitating improved oral hygiene and reducing the risk of periodontitis by limiting the environmental risk factor of plaque accumulation. However, in a patient who is genetically susceptible to periodontitis, it is important to remember that orthodontic correction of a malocclusion will not alter their genetic susceptibility to periodontal bone loss.

治疗计划的确定是复杂的，因为在开展正畸治疗之前，必须先治疗活动性牙周疾病，使之处于稳定状态，同时还应能很好地控制菌斑。因此，正畸的重新排列治疗只有利于那些拥有长期稳定牙周状况且主动控制菌斑积极性高的患者。只有那些在积极的牙周治疗结束 9～12 月后还能保持稳定的牙周状况，且没有出现进行性附着丧失的患者才可考虑进行正畸治疗。

The decision-making is complex, because it is essential to treat active periodontal disease and achieve stability with improved plaque control before embarking upon orthodontic therapy. Therefore, orthodontic realignment is only of benefit in cases of long-term periodontal stability in highly motivated patients. It should only be considered if patients demonstrate a stable periodontium with no progressive attachment loss for at least 9–12 months after active periodontal therapy.

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正畸治疗的负面影响

正畸治疗可能对牙齿、颞下颌关节和牙周组织造成医源性破坏，然而临床上却很少被关注。因此，建议开业医师应该谨慎地选择病例，制定相关的预防性措施和施加温和的正畸作用力。

在治疗过程中可能会发现龋齿和釉质脱钙，特别是在使用固定矫治器的情况下。日常的氟化钠（0.05%）漱口水对控制龋齿有显著效果。另外，牙科临床技师在治疗过程中起着主要作用，他们提供彻底的预防保健措施，包括局部使用氟化物、食谱分析和建议、窝沟封闭以及口腔卫生的维护。

过度的正畸作用力可能会导致牙根吸收，伴有中度牙周疾病的患者在过度的正畸作用力作用下将会出现牙齿的过早脱落（图8-3）。

Adverse Effects of Orthodontic Treatment

Orthodontic treatment may result in iatrogenic damage to teeth, temporo-mandibular joints and the periodontium. These potential complications rarely reach a level of clinical significance. Care in case selection, the establishment of a preventive programme and use of gentle orthodontic forces are recommended.

Caries and enamel decalcification may be found, particularly in association with fixed appliances. A daily sodium fluoride (0.05%) mouth rinse is effective in helping control caries. The dental hygienist plays a major role by providing a thorough preventive care programme, which may include topical fluoride, dietary analysis and advice, fissure sealants and oral hygiene support.

Excessive orthodontic forces may cause root resorption, which in conjunction with moderate periodontal disease can result in tooth loss at a later date (Fig 8-3).

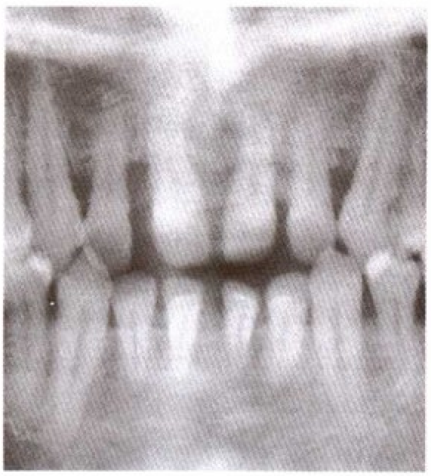


图8-3 X线片显示过大正畸力引起的切牙牙根被严重吸收

Fig 8-3 This radiograph shows severe root resorption of incisor teeth which has resulted from excessive orthodontic forces

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在积极的正畸治疗期间，牙周膜间隙宽度的增加会导致牙齿的松动度增大。若患者伴发牙周炎，则这种松动将严重影响其预后。一般情况下，牙齿的松动度会在正畸治疗完成之后减少，然后患者将进入“保持阶段”。

During active orthodontic treatment, widening of the periodontal ligament space may result in increased tooth mobility. In a periodontally compromised tooth this may significantly reduce its prognosis. In general, mobility will reduce after the active stage of orthodontic therapy has been completed and the patient enters the “retention phase”.

当牙槽骨骨板及其上附着的牙龈太薄或存在骨开裂、骨开窗等情况时，极易发生牙龈退缩，特别是在下前牙唇侧。而厚的角化龈可能有助于防止正畸治疗过程中的牙龈退缩。此外，在正畸治疗之前进行牙龈的结缔组织移植会降低发生牙龈退缩的可能性（图 8-4a，b）。

There is a risk of gingival recession, in particular labial to the lower incisors, when the alveolar bone plate and overlying attached gingiva are thin or where bony dehiscence or fenestrations exist. The presence of keratinised and thick overlying gingival tissue may help to prevent recession arising post orthodontic tooth movement. Gingival connective tissue grafting prior to orthodontic treatment can reduce the risk of gingival recession (Fig 8-4a, b).

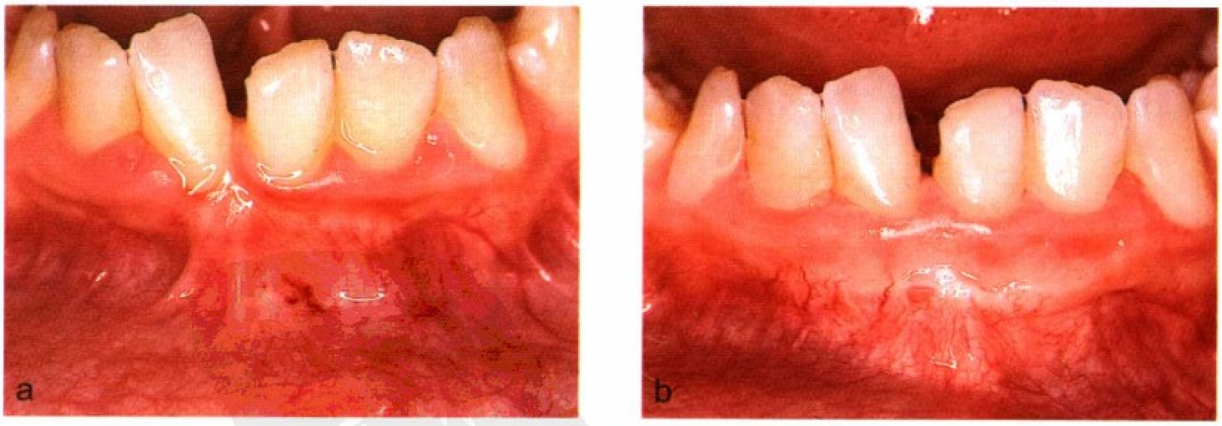


图8-4　a.术前患者覆盖的组织较薄；b. 在正畸治疗前进行结缔组织移植以增加覆盖组织的厚度，降低了正畸治疗期间牙龈退缩的可能性

Fig 8-4　(a) Patient with thin investing tissue before surgery, (b) Following connective tissue grafting to increase investing tissue during orthodontic therapy and reduce the risk of recession post orthodontics

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正畸治疗期间出现龈下菌斑的迁移，此时发现了大量与龋病和牙周疾病相关的细菌。据报导，变形链球菌、螺旋菌、活性杆菌、线形菌、梭状菌和产黑色素类杆菌等的数量都有增加。即使菌斑控制良好，正畸患者仍易于发生广泛的牙龈增生和边缘性龈炎。过度增生是暂时性的，在矫治器去除之后增生能自然地愈痊（图8-5）。有时，纤维性增生可能需要进行龈切手术或牙龈成形术。再一次强调，牙科临床技师能够为正畸矫正期的患者提供宝贵的帮助。

A shift in the subgingival microflora occurs during orthodontic treatment. Bacteria associated with caries and periodontal diseases are found in greater numbers. Increased levels of *Streptococcus mutans*, spirochaetes, motile rods, filaments and fusiform and black pigmented *Bacteroides* sp. have been reported. Even when high standards of plaque control are maintained, orthodontic patients are likely to develop generalised gingival overgrowth and marginal gingivitis. Overgrowth is usually transient and resolves spontaneously after removal of appliances (Fig 8-5). Occasionally, fibrous hyperplasia may require surgical excision by gingivectomy or remodelling by gingivoplasty. Once again, the dental hygienist can provide invaluable support for patients during this phase of orthodontic care.

牙周健康的青少年在正畸治疗时常使用固定矫治器，但这并不是影响牙周长期状况的主要因素。据报导，与未接受正畸治疗人群每年的附着丧失

Orthodontic treatment of periodontally healthy adolescents with fixed appliances is not a major factor in influencing long-term periodontal status. Mean annual rates



图8-5 正畸治疗后，患者由于口腔卫生不良而导致牙龈增生

Fig 8-5 A patient undergoing orthodontic therapy with poor oral hygiene has developed gingival overgrowth

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相比，平均每年因正畸治疗而产生的附着丧失为 0.05～0.30mm。

of attachment loss during orthodontic treatment are reported as 0.05–0.30 mm, which compares favourably with mean annual rates of attachment loss in populations not receiving orthodontic treatment.

在正畸治疗中，5%～10%的患者会出现牙周组织的破坏。很明显，这些数据都充分地反映了牙周疾病在人群中的总体发生率。因此在进行正畸治疗之前有必要将牙周疾病易感性的青少年排除在外。另外，对于某些患者，拔牙是正畸治疗计划中的一部分，拔牙区的牙周结构破坏最严重，特别是在受压侧的尖牙位置。

Periodontal breakdown related to orthodontic treatment occurs in 5–10% of patients. Significantly, this mirrors the incidence of substantial periodontitis in the population as a whole. It is therefore essential to identify those adolescents with a high risk of periodontal disease prior to commencing orthodontic treatment. In patients for whom extractions are part of the orthodontic treatment plan, periodontal destruction is greatest at the sites of previous extractions and particularly on the pressure side of retracted canines.

牙周组织处于活动性破坏的患者如接受正畸治疗将会加速牙周病的恶化速度，且会明显地增加失牙的可能性。相反，已萎缩但健康的牙周组织，如经成功牙周治疗之后的牙周组织，它能够接受正畸治疗而不产生负面作用。在对牙周状况已稳定的牙周炎患者进行正畸治疗时，开业医生必须进行有效的牙周维护（支持治疗）。牙科临床技师可以在这方面提供重要的帮助。

Orthodontic treatment in a patient with active periodontal disease will exacerbate the rate of periodontal disease progression and significantly increase the risk of tooth loss. Conversely, a reduced but healthy periodontium, such as remains after the successful treatment of periodontitis, can be treated orthodontically without adverse effects. It is essential to make arrangements for effective periodontal maintenance (supportive care) during active orthodontic treatment of previously stabilised periodontitis patients. The dental hygienist can contribute in a significant manner to this treatment.

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牙周病患者的正畸治疗

在接受积极的正畸治疗之前必须控制牙周疾病，而且患者需要在几个月的牙周维护期中确保牙周情况的稳定。因此，有必要进行一次基本牙周情况检查，以作为正畸治疗计划的必需组成部分。

正畸治疗，特别是涉及固定矫正器时，将增加菌斑的滞留量。对于牙周病患者，严格的牙周维护措施必须成为正畸治疗计划的一部分（图8-6）。这将意味着不可避免的更加频繁地到牙科临床技师处就诊，以检查菌斑控制情况，并在正畸治疗过程中去除软硬沉积物。

拔除牙弓中骨支持不良的牙以利于余留牙的重新排列时，必须谨慎考虑，如拔除下颌切牙。由于给定的正畸

Orthodontic Treatment of the Periodontal Patient

Periodontal disease must be controlled prior to active orthodontic treatment and the patient should have demonstrated stability over several months of periodontal maintenance. It is essential to perform a BPE as an integral component of an orthodontic assessment.

Orthodontic treatment, in particular involving fixed appliance therapy, will contribute to increased plaque retention. In periodontal patients, a strict supportive regime for periodontal maintenance should be devised as part of the orthodontic treatment planning (Fig 8-6). This will inevitably mean more frequent visits, ideally to a dental hygienist, to check plaque control and remove soft and hard deposits during orthodontic therapy.

Consideration should be given to the extraction of teeth excluded from the arch with poor bone support, to permit alignment



图8-6 适合戴固定矫治器患者的各种改良牙刷

Fig 8-6 Examples of modified brushes suitable for patients with fixed appliances

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作用力，对于已有附着丧失的健康但功能减弱的牙周组织将产生更大的影响，因此，正畸医生必须使用更加柔和的力量来治疗以减少对牙龈组织、牙骨质、牙槽骨和根面的牙本质可能造成的吸收破坏。

of the remaining dental units, e.g. lingually excluded lower incisor teeth. Loss of attachment in a reduced but healthy periodontal ligament results in a greater effect for a given orthodontic force. The orthodontist must therefore use reduced forces to limit potential damage to the periodontal ligament, cementum, alveolar bone and root dentine by resorption.

牙周治疗后，正畸治疗计划可能需要考虑到余留的功能减弱牙周组织的支持作用。牙槽骨的丧失和牙根支持结构的减少会导致牙齿支抗中心的根向移位（图8-7）。这种情况下，牙齿易于摇晃，因此治疗过程中需要反复改变牙齿移动及加力的方向。永久性保持器一般用来防止复发（图 8-8a 到 c）。

Following periodontal treatment, orthodontic treatment planning may need to be adapted to take account of the remaining, reduced periodontal tissue support. As a result of loss of alveolar bone and a reduced area of supported root structure the centre of resistance shifts apically (Fig 8-7). Teeth in such circumstances are prone to tipping, hence bodily movement requires increased reciprocating forces and moment. Permanent retention is normally required to prevent relapse (Fig 8-8a to c).

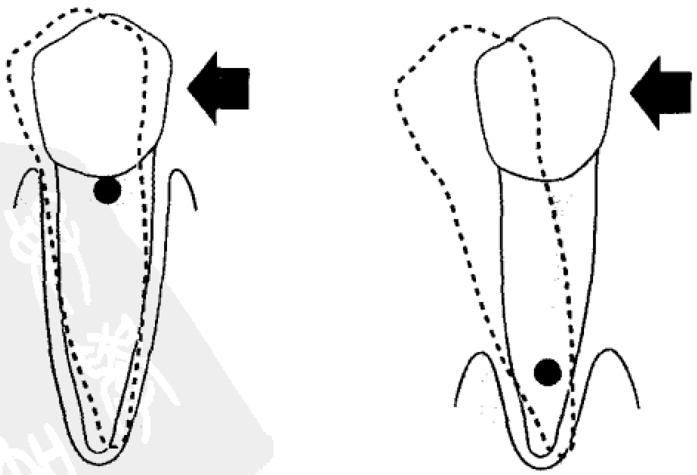


图8-7　图例说明牙槽骨吸收导致牙齿支抗中心的根向移位，致使牙齿更倾向于左右摇晃

Fig 8-7 Diagram to illustrate the movement of the centre of resistance in an apical direction as periodontal bone loss occurs, rendering teeth more prone to drifting

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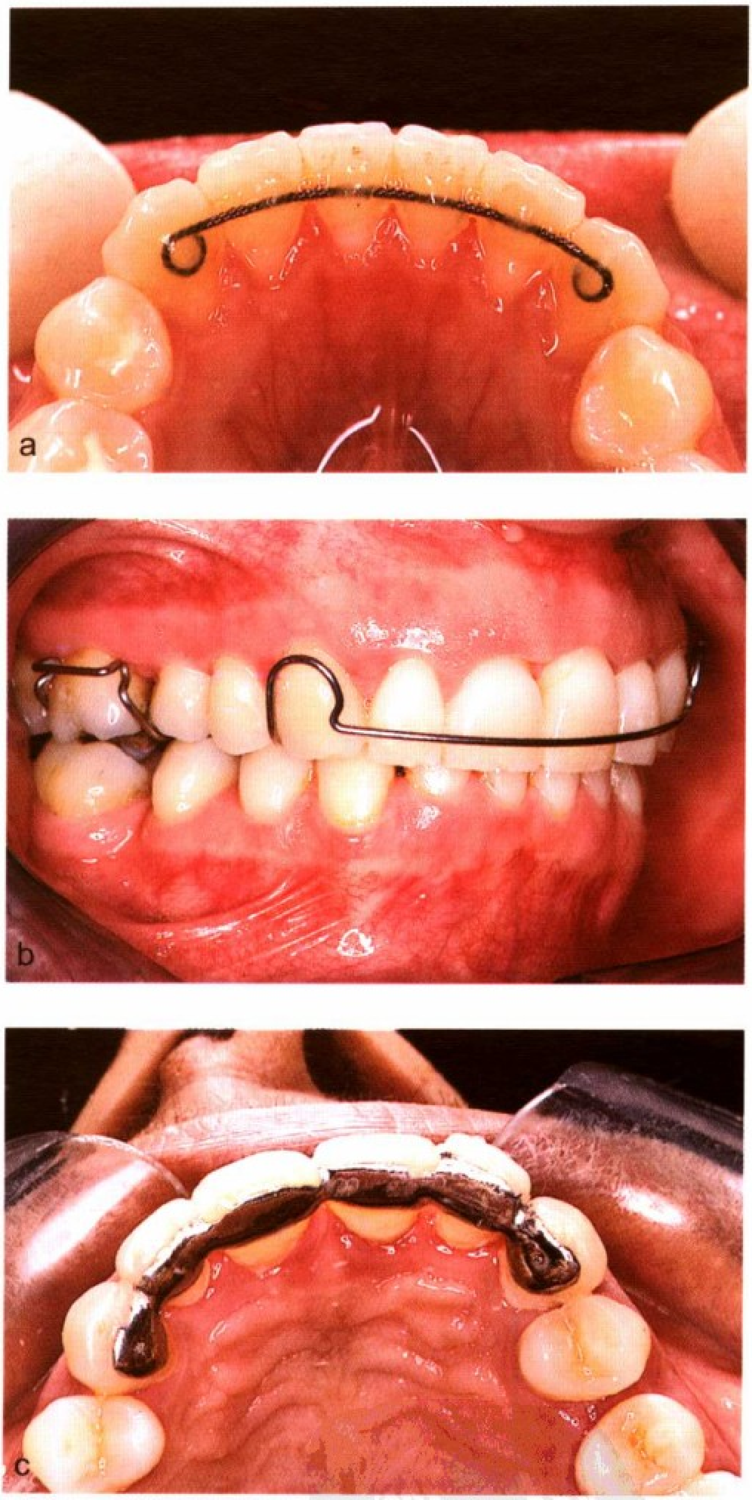


图8-8 a. 临床幻灯片显示弯曲金属丝和夹板；b. 上牙弓为可移动式保持器，此设计用于前牙正畸治疗后夜间的保持；c. 马里兰固定矫治器用于接受正畸治疗的牙周病患者

Fig 8-8 (a) Clinical slide of a twist flex wire and composite splint, (b) Upper arch removable retainer designed for night time to maintain the anterior tooth alignment post-orthodontics, (c) Maryland fixed retainer placed following orthodontic treatment in a periodontal patient

临床相关要点

• 未经过治疗的错殆畸形并不会增加牙周疾病发生的可能性，除非患者容易感染牙周疾病。

Key Points of Clinical Relevance

• Untreated malocclusion does not contribute to an increased risk of periodontal disease, unless the patient is

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- 正畸治疗会给少数牙周疾病易患者带来不可逆的牙周损伤。
- 接受正畸治疗前所有患者都应拥有一份基本牙周情况检查表，条件允许的话，最好拥有详细的牙周图示。
- 在正畸治疗期间，口腔卫生是预防感染牙周疾病的最重要环节。
- 牙周疾病已治疗的成年患者可以放心地接受正畸治疗，因为已经证明了在长期的维护治疗过程中其牙周保持着稳定的状态。
- 牙周疾病已治疗的患者在正畸治疗过程中需要进行更加彻底的维护。
- 固定矫治器治疗的患者将需要特殊的口腔卫生维护，并应把清洁计划包括在内。
- 由于治疗可能导致牙齿松动，在正畸治疗过程中应监控牙齿的松动度。
- 在计划对牙周炎患者施行正畸治疗时，开业医师应预先咨询专科医师的意见。
- 如果你怀疑一个正在接受正畸治疗的患者开始出现牙周并发症，应及早转诊。

susceptible to periodontal disease.

- In a small number of disease susceptible patients orthodontic intervention will cause irreversible periodontal damage.
- All patients should have a BPE prior to commencing orthodontic treatment and, if necessary, detailed periodontal charting.
- Oral hygiene is the most important factor to prevent periodontal disease during orthodontic therapy.
- Adults with treated periodontal disease can safely receive orthodontic treatment, provided they have demonstrated periodontal stability during a lengthy supportive care program.
- Patients with treated periodontal disease will require intensive supportive periodontal care throughout orthodontic management.
- Oral hygiene aids specific for fixed appliance therapy will need to be introduced into the cleaning regime.
- Tooth mobility should be monitored during orthodontic therapy as this may be increased by therapy.
- When contemplating orthodontic intervention in a periodontitis patient, seek a specialist opinion in advance.
- If you suspect a patient under orthodontic care is developing periodontal complications seek early referral.

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拓展阅读

Further Reading

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2 Zachrisson BJ. Orthodontics and Periodontics. In: Lindhe J, Karring T, Lang NP (Eds). Clinical Periodontology and Implant Dentistry. Copenhagen: Munksgaard, 1998.

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第9章 殆与牙周疾病的关系

Occlusion in Relation to Periodontal Disease

目　的

本章的目的是描述殆在牙周疾病中的作用，并确定殆治疗的临床地位，同时，简要地讨论了殆治疗中运用的临床技术。

Aim

This chapter aims to outline the role of occlusion in periodontal disease and to identify clinical situations in which occlusal therapy may be indicated. Clinical techniques for occlusal therapy will be briefly discussed.

要　点

通过阅读本章，开业医师可以了解到动态殆的不协调对已存在的牙周病变的影响，还可以更好地理解调殆可改善治疗牙的预后。

Outcome

Having read this chapter the practitioner should be able to recognise the influence of dynamic occlusal disharmonies on existing periodontal lesions and will have a practical understanding of how intervention may improve the prognosis of affected teeth.

前　言

咀嚼器官包括牙及其支持组织，颞下颌关节及相关的神经肌肉骨骼结构，只有这些结构处于动态的协调关系时，才能保证殆功能的协调。如果丧失了发挥功能所必需的协调性及整合作用，就可能导致已经存在的牙周

Introduction

To function in occlusal harmony the masticatory apparatus comprising the teeth and supporting tissues, temporomandibular joints (TMJs) and associated neuromusculoskeletal structures must operate in an integrated and dynamic manner. Loss of

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疾病进一步恶化。

integrated function or homoeostasis in response to functional demand may lead to the exacerbation of an existing periodontal condition.

健康状态下，牙周组织将对功能性殆力的作用产生适应性变化。牙周病时，这种适应性作用减弱，之前可逆的骨形态变化可能变为不可逆状态。预测这些变化对牙齿治疗的影响是很重要的，它可以对治疗效果及牙列的长期预后进行预测。

In health, adaptive changes occur within the periodontium to functional occlusal forces. In periodontal disease, this adaptive capacity diminishes and previously reversible changes in bone morphology may become irreversible. The ability to predict how changes may influence dental treatment is important in forecasting treatment outcomes and the longer-term prognosis for the dentition.

正常殆及牙周组织

Normal Occlusion and the Periodontium

咀嚼及吞咽导致殆力的传递。咀嚼肌可控制殆力的大小，在正常生理作用下，殆力作用只持续零点几秒。多数殆力主要为轴向力，而牙周组织不但可以抵抗轴向力，还可以抵抗部分侧向力。

Teeth transmit occlusal forces generated by mastication and swallowing. The magnitude of the occlusal force is controlled by the muscles of mastication. In normal physiological function, actions last only a few tenths of a second. The direction of the majority of occlusal forces is principally axial. The periodontium is designed to resist axial force but some lateral stress can also be tolerated.

原发性殆创伤

Primary Occlusal Trauma

当持续的水平力超过生理适应性时，牙周膜纤维无法承受更大力的作用，这将导致牙周膜宽度增宽，局部组织改建（图9-1）。在没有牙周疾病时，

When persistent horizontal forces exceed the physiological limit of adaptation the periodontal fibres are unable to absorb the force and localised tissue remodelling with

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图9-1 临床上可见的无牙周病变时牙的漂移

Fig 9-1 A clinical slide illustrating drifting with no periodontal disease

这种损伤称为原发性殆创伤。在牙周疾病治疗后，牙周组织也可能恢复健康，但功能却减弱。此时，正常生理范围内的殆力可能就超过了牙周组织的生理适应能力。这种情况下殆力可使牙周组织的适应能力及结构产生一定的生理变化，表现为牙齿松动。殆创伤这一专业术语多用于描述咬合失调引起的牙周组织病变。

widening of the periodontal membrane space occurs (Fig 9-1). In the absence of periodontal disease, this is termed primary occlusal trauma. In a reduced but healthy periodontium, such as may exist after treatment of periodontal disease, forces within the normal physiological range can exceed the periodontal tissues capacity for physiological adaptation. Under such circumstances the structure and adaptive capacity of the periodontium to occlusal loading permits a degree of physiological variation in tooth mobility. The term occlusal trauma is used to describe the lesions that may develop within the periodontal tissues from occlusal disharmonies.

原发性殆创伤的临床特点

- 没有牙周炎。
- 牙可侧向移动。
- 牙磨损（形成轻微的斜面或明显的磨损）（图 9-2）。

Clinical Features of Primary Occlusal Trauma

- No periodontitis.
- Tooth mobility in the lateral plane.
- Tooth wear (mild faceting or marked attrition) (Fig 9-2).

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图 9-2 磨牙习惯引起的磨耗
Fig 9-2 Attrition due to bruxing habit

- 釉质或修复体折断。
- 殆干扰（从下颌后退接触位到牙尖交错位或侧方运动、前伸运动时）。
- 颊黏膜嵴。
- 舌侧缘切迹。
- 舌尖变红。
- X线表现：
  - 初期，牙周膜间隙增宽。
  - 牙槽骨向冠方呈漏斗样缺损。
  - 牙骨质增生。
  - 牙根吸收。
  - 继发性牙本质沉积于髓腔。

- Fractures of the enamel or restorations.
- Occlusal interferences (either from retruded contact position (RCP) to intercuspal position (ICP), or in lateral excursions/protrusive movements).
- Ridging of buccal mucosa.
- Indentations in lateral border of the tongue.
- Reddening of the tip of the tongue.
- Radiographically:
  - initially, widening of periodontal membrane space
  - funnel-shaped defect develops coronally in alveolus
  - hypercementosis
  - root resorption
  - secondary dentine laid down in the pulp chamber.

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原发性殆创伤的治疗

原发性殆创伤所致的所有牙周膜的病理变化都是可逆的，治疗成功的关键在于维持牙周的健康并尽量减少/消除外力作用，包括选择性调磨来去除下颌后退接触位与牙尖交错位间，侧方运动及前伸运动时的殆干扰以及治疗夜磨牙的殆护板（理想的设计是密歇根型硬丙烯酸殆护板），而少量的固定对提高功能是必需的（见后）。

Management of Primary Occlusal Trauma

All pathological changes within the periodontium should be reversible and the key to successful management is to maintain periodontal health and to attempt to reduce/eliminate the excessive forces. This may involve selective grinding to remove interferences between RCP and ICP and in lateral excursion or protrusion; occlusal guards for nocturnal use (the ideal design is a "Michigan" type hard acrylic guard); and rarely splinting may be necessary to improve function (see below).

继发性殆创伤（发生于已有病损的牙周组织的创伤）

目前的研究表明：无论牙周炎存在与否，殆力均可引起牙槽骨和牙周结缔组织的变化。继发性殆创伤是指牙周炎症状态下的殆创伤。继发性殆创伤可导致牙齿松动度、探诊深度、附着丧失快速增加。在创伤性殆力存在的情况下，未经调殆牙周炎也可以治疗并可维持牙周组织的健康。谨记，殆力并不是牙周炎的始发因素。然而，在深牙周袋存在时，殆力在某些情况下可作为协同因素促进牙周病的进展。继发性殆创伤除具有与原发性殆创伤相同的临床特征外，还伴有牙齿的位置漂移，X线上表现为"月牙形骨缺损"

Secondary Occlusal Trauma (Trauma Within a Diseased Periodontium)

Current literature indicates that occlusal forces can cause changes in the alveolar bone and periodontal connective tissues both in the presence and in the absence of periodontitis. Secondary occlusal trauma refers to the presence of occlusal trauma in the presence of periodontitis. Secondary occlusal trauma can result in more rapid increases in tooth mobility, probing pocket depths and attachment loss. The periodontitis can be treated and periodontal health maintained without occlusal adjustment and in the presence of traumatic occlusal forces. Remember, occlusal forces do not initiate

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及特征性角形骨缺损（图9-3）。这些殆创伤存在的情况下，殆力都在正常生理范围内。如果殆力作用于功能减弱且处于炎症状态下的牙周附着装置，则可加速牙周疾病的进展。

periodontitis. However, in the presence of pre-existing deep periodontal pocketing, occlusal forces may in some instances act as a co-factor resulting in an increase in the rate of periodontal disease progression. The clinical features of secondary occlusal trauma are the same as for primary occlusal trauma, but additionally teeth may drift out of position and radiologically "crescentic bone loss" and angular bone defects are characteristic (Fig 9-3). In this form of occlusal trauma loading forces are within the normal physiological range. Forces acting on a reduced and inflamed periodontal attachment apparatus are therefore able to modify periodontal disease progression.

牙齿松动是殆负担过重的表现之一。然而，除殆力负担外，其他一些因素也可导致牙齿松动度的增加。牙齿松动度还受到以下因素的影响：

Tooth mobility is a feature of occlusal overloading. However, factors other than occlusal loading contribute to the clinical observation of tooth mobility. Tooth mobility is also influenced by:



图9-3 X线显示月牙形骨缺损

Fig 9-3 Radiograph demonstrating a crescentic pattern of bone loss 21

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- 牙槽骨缺损的程度。
- 附着丧失的程度。
- 根长（某些牙根先天性缩短或因病理性缩短）。
- 炎症导致牙周组织破坏。

这些都是常见的病理性过程，而由于殆力的作用使牙周韧带增宽则是一个生理性适应过程（图 9-4）。

错殆畸形可潜在地破坏以下器官：

- 颞下颌关节。
- 磨耗牙（图 9-2）。
- 继发性牙髓炎患牙。
- 超过生理性适应能力的牙周组织。

- the extent of alveolar bone loss
- the degree of attachment loss
- root length (some roots are congenitally short or pathologically shortened)
- the disruption of the periodontal tissues by inflammation.

These are essentially pathological processes whereas widening of a healthy periodontal ligament in response to occlusal forces is a physiological adaptation (Fig 9-4).

Malocclusions can potentially cause damage to:

- temporomandibular joints
- teeth by attrition (Fig 9-2)
- teeth by inducing pulpitis
- periodontal tissues by exceeding the threshold for physiological adaptation.

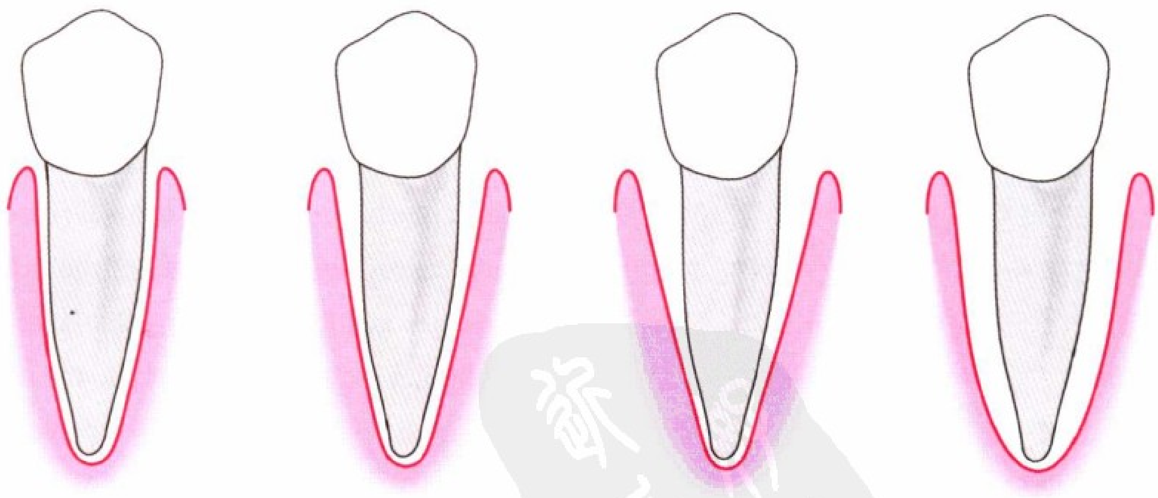


图 9-4 殆负担过重导致健康牙周组织产生一系列的变化

Fig 9-4 The sequence of change in a healthy periodontium in response to increasing occlusal loading

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与牙周炎危险因子相关的殆特征

错殆畸形有一些特殊的特征可增加牙周炎的危险因素。确诊错殆畸形时，医生应寻求正畸或牙周专科医生的意见。

牙列拥挤以至于需从牙弓中拔牙时，将易于发生牙龈退缩。骨缺损或骨开窗处的组织较薄，更易于发生牙龈退缩。当患者口腔卫生良好时，错殆牙周围的菌斑较易控制。然而，通常情况下患者口腔卫生较差，尤其在后牙，常见错殆畸形伴菌斑堆积和较差的牙周情况。

完全前部深覆殆是极具破坏性的殆型。它可引起牙龈组织重度萎缩，同时食物被挤入下颌切牙唇侧与上颌前牙腭侧。前牙深覆殆属于Ⅱ类2分类错殆畸形。此外，下颌第一磨牙的缺失可间接导致切牙的创伤。这是因为前磨牙和尖牙将向远中移动，同时唇肌张力过大，可使下颌前牙发生创伤性舌侧移位，这将导致下颌切牙将损伤上颌腭侧牙龈（易于治疗），或上颌切牙损伤下颌唇侧牙龈（难以治疗），或

Occlusal features which are relevant to the risk of periodontitis

There are some specific features of malocclusion which create an increased risk of periodontal disease. When identified they should lead the practitioner to consider obtaining an orthodontic or indeed a periodontal specialist opinion.

Teeth which are crowded, such that they are excluded from the dental arch, are prone to localised gingival recession. Where a bone defect or dehiscence occurs and the investing tissue is thin, recession is most likely to occur. In patients with excellent manual dexterity and good oral hygiene, the control of plaque around malaligned teeth is not compromised. However, in the average patient with less than perfect oral hygiene, particularly in posterior sextants, malalignment is associated with plaque accumulation and poor periodontal status.

A deep and complete anterior overbite is a particularly destructive occlusal feature. It may cause severe shearing of the gingival tissues and food impaction labial to the mandibular incisors and palatal to the maxillary incisors. The deep anterior overbite is a feature of a Class II division 2 malocclusion. In addition, the loss of mandibular first molars can contribute indirectly to the production of a traumatic incisor relationship. Premolar and canine teeth drift

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两者同时发生。Ⅱ类1分类错殆畸形则仅影响到腭侧龈组织。

腭侧损伤的治疗

可采用研究模型及正畸医生的意见来评估下颌切牙进一步萌出的可能性。刮治及加强口腔卫生指导可减少腭侧牙龈炎症，必要时可采用牙龈切除术，这些都是必需的（研究模型有助于观察组织收缩量）。如果期望下颌切牙萌出更多，可在腭侧黏膜制作一金属护板，并在3|3中的尖牙及第一前磨牙放置卡环，同时用调整护板厚度的方法来降低下颌切牙的高度。必须每晚都使用护板，没有护板的引导作用将无法降低切牙的高度或切牙将过度萌出。

下颌唇侧损伤的治疗

刮治、根面平整和良好的口腔卫生可能导致下颌唇侧组织收缩，但这

distally and, in the presence of strong lower lip muscles, lower anterior teeth may retrocline into a traumatic lingual position. The lower incisors may strip the gingival tissue palatal to the upper incisors (easy to treat), or the upper incisors may strip the tissue labial to the lower incisors (difficult to treat), or both. In Class II division 1 malocclusions, only the palatal tissue is affected.

Treatment for Palatal Damage

Take study models and orthodontic advice to assess the likelihood of further eruption of the lower incisors. Reduce palatal gingival inflammation by scaling and oral hygiene instruction, and, if necessary, a gingivectomy. This may be all that is required (study models will help to see amount of tissue shrinkage). If further eruption of lower incisors is expected, make a palatal mucosal guard in metal, 3-|-3 with clasping on the canines and first premolars and reduce the lower incisors by the thickness of the guard. The guard is worn every night and one should never reduce incisors without guard construction, or they will overerupt.

Treatment for Lower Labial Damage

Scaling, root surface debridement and good oral hygiene may shrink lower labial

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无需进一步治疗。另一种方法可以使用上颌“Dahl”器械（见Gough and Setchell，1999），它有一坚固的镍钛平面（腭侧切牙殆平面），可消除所有后牙的接触点。可将这种器械置于下颌切牙间，使后牙过度萌出，从而分离上颌切牙与下颌牙龈。分离后，就可制作一伴有切牙边缘覆盖的薄金属上颌覆盖板，以利于夜晚使用，这可防止上颌切牙的过度萌出。这些病例均较难治疗，故应参考专家的意见。不能仅单纯依赖于后牙殆平面，这将促使上颌切牙过度萌出而使病情更加严重。对于严重的病例，可考虑正畸及外科联合治疗方案。

tissue sufficiently for no further treatment to be required. Another option may be to construct an upper "Dahl" appliance (see Gough and Setchell 1999) with a solid nickel chrome platform (palatal incisal biteplane) to eliminate contact between all posterior teeth. This is believed to function by intrusion of lower incisors and an element of overeruption of posterior teeth, thereby separating the upper incisors and the lower labial gingivae. Once separation is achieved, a full upper occlusal coverage guard can be constructed from thin metal with incisal edge coverage for nocturnal use. This prevents overeruption of the upper incisors. Such cases are difficult to treat and should be referred for specialist advice/treatment. Never construct a posterior-only bite plane, as this will allow the upper incisors to overerupt and make matters worse. For severe cases, consider a combined orthodontic surgical approach.

其他殆问题

其他可以影响牙周健康的殆异常包括：

- 明显的覆盖，在上颌前牙区可增加牙周破坏的危险因素。然而，程度较轻的覆盖（不超过6mm）与牙周破坏无明显相关性。
- 牙弓的不规则性使牙齿更加难

Other Occlusal Issues

Other occlusal anomalies that may compromise periodontal health include:

- A marked increase in overjet, which is associated with increased risk of periodontal breakdown in the upper anterior sextant. However, smaller degrees of overjet not exceeding 6 mm tend to be irrelevant.
- Irregularity in the arch form will make

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以清洁，因此增加了牙周破坏的危险因素。

- 重度扭转牙一般不承受轴向力，常偏向牙弓的颊侧或舌侧。
- 唇侧骨质较薄时，易导致局部牙龈退缩。
- 牙缺失或牙偏移可以导致食物嵌塞和菌斑滞留。

当牙周组织破坏时，若存在殆干扰，殆力将超过余留牙周组织的适应能力。于是，牙漂移将进一步破坏殆平衡。磨牙的早接触可引起下颌前伸而导致切导作用改变。非工作侧在侧方接触，并不引起牙周病，但会加重已存在的牙周病，这种接触常见于上颌前磨牙。有早接触的牙其牙周病损并未增加。

在以下关于控制活动性牙周病的方法中，当牙齿松动度明显或松动度继续增加时，殆治疗是较好的方法。

tooth cleansing more difficult hence increasing the risk of periodontal breakdown.

- Severely rotated teeth are prone to non-axial loading forces and are frequently positioned either buccal or lingual to the arch form.
- Thin labial bone when present will predispose to local gingival recession.
- Missing and drifted teeth will also result in food trapping and plaque retention.

As periodontal breakdown occurs, occlusal interference, if present, may exceed the adaptive capacity of the residual periodontal tissues. Subsequently, tooth migration can further derange occlusal harmony. Premature molar contacts can cause forward posturing of the mandible and result in altered incisal guidance. Non-working side contacts in lateral excursion, while not causing periodontal disease, will exacerbate preexisting periodontal defects. Such contacts are most frequently seen in the maxillary pre-molars. The incidence of periodontal defects is not increased in teeth with premature occlusal contact.

Following control of the active periodontal disease, occlusal therapy may be indicated if teeth remain unacceptably mobile or if the degree of mobility continues to increase.

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殆治疗

开始殆治疗之前必须进行完整的分析。殆分析包括殆的临床评估和研究模型的咬合功能检查。临床殆分析应该包括对牙及牙间关系、颌及相关肌肉、颞下颌关节及其运动间的全面评估。研究模型精确的咬合关系是殆治疗必要的组成部分，应使用处于下颌后退接触位的半调整式殆架。检查咬合研究模型包括评估牙的特征、牙弓内及牙弓间的位置、侧导、牙表面缺失引起的斜面（见国际精萃出版集团出版的《殆：理论和临床运用》一书）。

检查者应该记录殆功能紊乱的特殊现象，如磨损、磨耗、局部牙尖小斜面、侧向漂移、前牙过度萌出、牙齿松动度增加。尤其应记录对软组织如腭侧黏膜和下颌唇侧牙龈的损害。同时，应记录牙周状态，如局部牙周袋深度和牙龈退缩情况。

Occlusal Therapy

Prior to embarking upon occlusal therapy, a thorough analysis must be performed. Occlusal analysis includes clinical assessment of occlusion and examination of articulated study casts. Clinical occlusal analysis should consist of a comprehensive assessment of the teeth and interarch relationships, the jaws and associated muscles, temporomandibular joints and their movements. The accurate articulation of study models is an essential component of occlusal therapy. A semi-adjustable articulator with models mounted in the retruded contact position should be employed. Examination of articulated study models allows assessment of the features of the teeth, their inter- and intra-arch arrangement, lateral guidance, faceting and patterns of tooth surface loss (see Quintessential book *Occlusion: A Theoretical and Team Approach*).

The operator should record specific signs of occlusal dysfunction such as abrasion, attrition, localised faceting on cuspal inclines, labial drifting and overeruption of anterior teeth and increased tooth mobility. In particular, note should be made of damage to soft tissues, e.g. the palatal mucosa and lower labial gingiva. At the same time, the periodontal status should be recorded by noting sites of localised periodontal

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不正确的调殆可引起牙的不可逆损伤。因此，在口内进行调殆前应在模型上先调殆。

pocketing and gingival recession.

Inappropriate occlusal modification can cause irrevocable damage to the dentition. As a consequence, occlusal modifications should be practised on models before proceeding in the mouth.

夹板固定术在牙周治疗中的运用

Splinting in Periodontal Treatment

夹板较少运用于牙周炎的牙列中，它多用于需拔除的患牙的临时固定。这是因为牙的固定或自主运动的消除可导致牙槽嵴萎缩（废用性萎缩），若牙仅余留 5%～10%剩余骨支持将引起根尖病变。对于这一规则很少有例外。

Splinting has very few applications in periodontally compromised dentitions. It is normally used only temporarily to stabilise teeth that require extraction in the longer term. The reason for this is that immobilisation of a tooth or removal of independent movement can result in alveolar atrophy (disuse atrophy), which for a tooth with 5–10% residual bone support can result in apical involvement. There are a few exceptions to this rule.

牙周炎症控制后夹板的作用将受到限制。使用夹板的牙有一明显的问题即菌斑滞留，故这种处理一般仅用于牙松动度明显的患者。口腔卫生差的患者不适于使用夹板（图 9-5）。当余留牙的动度使患者感到不舒服或影响正常咀嚼功能或需修复缺失牙而余留牙不适于作为义齿桥基牙时，可以使用夹板。

Splinting has limited application when inflammatory periodontal disease has been controlled. Plaque retention is a significant problem around splinted teeth and this form of management can only be used in highly motivated patients. Splinting should not be used in patients with poor oral hygiene (Fig 9-5). Splinting can be applied, if residual mobility of teeth is such that the patient finds them uncomfortable and normal masticatory function is impaired or when missing teeth require replacement and remaining teeth are unsuitable as denture or bridge

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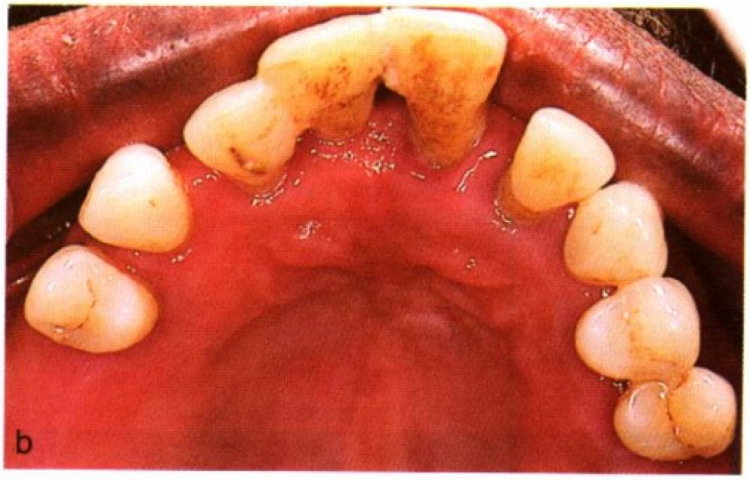


图9-5 夹板周围菌斑堆积伴牙石
Fig 9-5 (a, b) Plaque retention with calculus around a splint

牙齿的松动度使用一种简单指数(Miller 指数)来记录:

0 = 正常生理动度 (< 0.2mm)

1 = 可察觉的动度 (< 1.0mm)

2 = 中等动度,超过 1.0mm

3 = 严重动度,水平向超过 1.0mm,伴垂直向动度。

使用夹板(预备量小的树脂粘结夹板)时,有几种治疗方式可供牙周炎患者选择,如螺旋弯弓丝与树脂联合

abutments.

Tooth mobility is recorded using a simple index called Miller's Index:

0 = normal physiological mobility (<0.2 mm).

1 = detectable increased mobility (<1.0 mm).

2 = moderate mobility exceeding 1.0 mm.

3 = severe mobility exceeding 1.0 mm in a horizontal plane with additional vertical mobility.

Where splinting is indicated, fixed minimal preparation resin-bonded splints, e.g. twist-flex wire and composite or cast metal

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运用或铸造金属酸蚀粘结系统。使用与个别牙的运动程度相一致的夹板，如螺旋弯弓丝与树脂联合系统更可能获得成功（图 9-6）。这种系统的优点在于牙间压力由正畸弓丝而不是直接由树脂承受，而单独使用树脂则容易折断。解决牙间树脂咬合板折断的方法之一是使用玻璃纤维复合体（图 9-7）。这些系统中，玻璃纤维如"E－玻璃纤维"(Stick Tech，Turku，芬兰）可与树指结合而加力于牙间桥，同时还允许一些部分的弯曲和个别牙的运动。附着于牢固夹板的移动最明显的牙是最易丢失的牙。

etch-retained structures are, the treatment of choice in periodontal patients. Splint designs incorporating some degree of individual tooth movement such as the twist-flex wire/composite system are more successful (Fig 9-6). This system has the advantage that the interdental stresses are borne by the orthodontic wire rather than directly by composite resin, which, if used alone, is likely to fracture. One solution for overcoming the interdental fracture of composite-only splints is to use glass-fibre reinforced composite (Fig 9-7). In these systems, glass fibres such as "E-glass fi-



图9-6 运用正畸弯弓丝及腭侧点状复合树脂保持的永久性夹板
Fig 9-6 Permanent splinting using an orthodontic twist wire and palatal spot composite retention

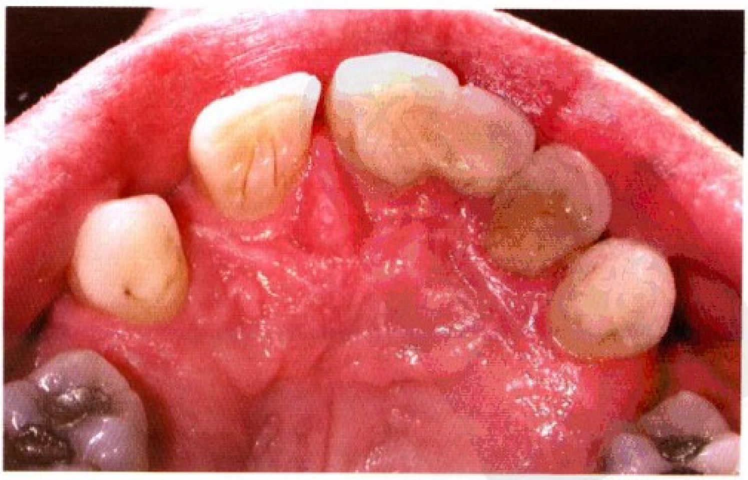


图9-7 E－玻璃纤维修复体以减少 21 与 22 牙间区树脂的折断
Fig 9-7 An "E-glass fibre" restoration to reduce composite fracture in the interdental zone between 21 and 22

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bres" (StickTech, Turku, Finland) can be cured within the composite to add strength to the interdental bridge, whilst still allowing some flexion and individual tooth movement. The most mobile tooth attached to a rigid splint structure is the tooth most likely to debond.

Ⅱ类2分类错殆畸形的病例中，直接的殆创伤将使下颌颊侧及上颌腭侧牙周组织从切牙分离（图9-8）。夹板则可为软组织提供保护作用。这是一种简单的替代正畸与正颌外科联合治疗的方法。

In the case of a Class II division 2 malocclusion, direct occlusal trauma may strip the mandibular buccal and maxillary palatal periodontal tissues from incisor teeth (Fig 9-8). A splint may offer protection for soft tissues. This is a simple alternative to complex orthodontic and orthognathic surgical management.

对于牙周病引起的漂移，使用正畸方法重排后极易复发，要求使用永久性固定夹板来保持。(图9-9 a，b)。

Following orthodontic realignment of teeth which have drifted due to periodontal disease, relapse is a significant risk. Permanent fixed splint retention is likely to be required (Fig 9-9 a, b).



图9-8 Ⅱ类2分类错殆畸形伴下颌切牙牙周支持组织损伤

Fig 9-8 A Class II division 2 malocclusion with trauma to lower incisor periodontal support

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图9-9 a. 牙周病已控制，但存在牙的漂移；b. 同一病例正畸重排后，要求使用永久性保持器

Fig 9-9 (a) Periodontal disease has been controlled but tooth drifting is a problem. (b) The same case after orthodontic alignment; permanent retention is required

临床相关要点

- 殆紊乱患者单纯的殆治疗无法阻止牙周炎的进一步发展——牙周治疗应开始于殆治疗之前。
- 包括调殆在内的治疗方案作为牙周治疗的一部分应以患者的功能及舒适为前提。
- 牙周病控制后，重度松动牙的保存治疗上，殆治疗起着重要作用，但在牙周病患者的治疗上则

Key Points of Clinical Relevance

- In patients with occlusal disharmonies, occlusal therapy alone will not arrest the progression of periodontitis — periodontal therapy must take precedence over occlusal therapy.
- The decision to include occlusal adjustment as a part of periodontal therapy should follow evaluation of the patient's comfort and function.
- Occlusal therapy may have a role in the management of significant tooth mobility remaining after the control

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作用较小。

of periodontal disease, but otherwise has a minimal role in the management of periodontal patients.

- 在对牙周病患者进行殆治疗前,应征求专家的意见。殆治疗中的错误对这种病例危害极大,并将导致殆关系的不可逆改变。

- Consider referral for a specialist periodontal opinion before embarking on occlusal therapy in patients with a diagnosis of periodontitis. Mistakes made in planning occlusal therapy in such cases can be very damaging and can alter the occlusion in an irreversible manner.

- 牙周夹板对牙周治疗的作用并非长远的。

- Splinting of teeth is rarely of long-term benefit in periodontal management.

拓展阅读
Further Reading

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第10章 牙周与修复的关系

Periodontal — Restorative Interface

目 的

本书最后一章的目的在于探讨牙周健康与牙体外科学、牙髓治疗及修复治疗（固定或可摘）间的关系。

Aim

This final chapter aims to examine the relationship between periodontal health and aspects of operative dentistry and endodontic and prosthodontic (fixed or removable) therapy.

要 点

阅读完本章后，开业医师将明白为什么修复治疗的最高标准要求有健康且维护良好的牙周组织，至多仅龈缘可以有轻度炎症，这样将有利于牙修复体周围良好的菌斑控制，进而保证修复治疗获得长期的成功。

Outcome

Having read this chapter the practitioner will appreciate why the highest standards of restorative treatment require a healthy and well-maintained periodontium with minimal gingival inflammation to facilitate good plaque control around dental restorations and appliances and thereby enhance longer-term success.

简 介

口腔是一个开放的生长系统，在这里大多数细菌只有粘附于"未脱落"的牙体硬组织表面，如牙、修复体、牙种植体或修复体（见 Chapple and Gilbert 2002）才能存活。细菌粘附包括四个阶段：转移到牙表面、初期粘附

Introduction

The oral cavity is an open growth system in which most bacteria can only survive if they adhere to "non-shedding" dental hard surfaces such as teeth, restorations, dental implants or prostheses (see Chapple and Gilbert 2002). Bacterial adhesion oc-

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（包括可逆和不可逆两个过程）、菌种间相互作用下的附着及最后的克隆化。在细菌粘附的过程中，细菌粘附的成功与否取决于牙表面的粗糙度和自由能。表面粗糙度的降低可减慢菌斑的形成和成熟。表面自由能的减少将导致菌斑生成率的下降、菌斑表面滞留能力的降低以及表面克隆化菌属的改变。

curs in four phases: transport to the surface, initial adhesion (which has a reversible and an irreversible stage), attachment by specific interactions and eventual colonisation. During the process of bacterial adhesion, the roughness and the free energy of the surfaces play a significant role in determining whether bacteria adhere successfully or not. A reduction in surface roughness reduces both plaque formation and maturation. A reduction in free surface energy of the substratum will result in a decrease in the plaque growth rate, a decrease in plaque retention capacity of the surface and changes in the bacterial species colonising the surface.

冠内修复体

材料的选择

口内任何形式修复体的存在，即使是理想修复体，也将增加菌斑滞留的危险性，最终将导致牙周病的发生。这是由于任何一种修复材料的表面能都不可能低于天然釉质，且牙与修复体间的连接部分将有菌斑滞留。

表面粗糙度是牙科材料的一个本质特征，可用抛光、刮治、刷光、冷凝、上釉及成形的方法来改变。表面粗糙度的极限值为0.2μm，超过这个值细菌的粘附将增加，故使用牙科材料时遵从厂家的指导是必要的。

Intracoronal Restorations

Choice of material

The presence of any restoration in the mouth, even if of ideal quality, will increase the risk of plaque retention and, as a consequence, periodontal disease. This is for two reasons: no restorative material has a surface energy as low as natural enamel and junctions between the tooth and restoration will retain plaque.

Surface roughness is an intrinsic feature of dental materials, which can be altered by polishing, scaling, brushing, condensing, glazing and finishing. A threshold surface roughness of 0.2 microns exists above which bacterial adhesion will increase. It

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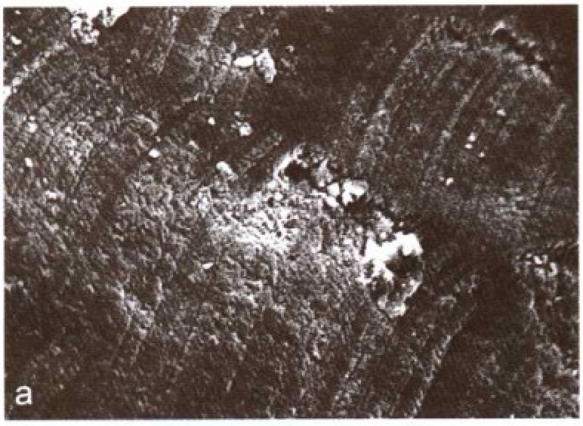
前牙修复体复合树脂材料的选择注重美观的需要，而选择后牙修复体材料时则有助于口腔卫生的维护。材料表面的纹理有助于菌斑的滞留（图10-1a到c）。抛光后的黄金及上釉后的瓷将减少菌斑的滞留，但由于功能性使用，即使高度抛光的表面也将出现磨损，并将导致菌斑滞留增加。

抛光后的银汞合金强度将减弱，同时邻接点较难进行抛光。保持修复

is essential to follow manufacturer's directions for the handling and finishing of dental materials.

Whilst for anterior restorations composite materials are an aesthetic necessity, care is required in the selection of materials for posterior restorations. The surface texture of materials contributes to plaque retention (Fig 10-1 a to c). Polished gold or glazed porcelain result in minimum plaque retention, but with function even highly polished surfaces undergo wear and become more plaque retentive.

Amalgam is weakened by polishing and access to interproximal sites is difficult to



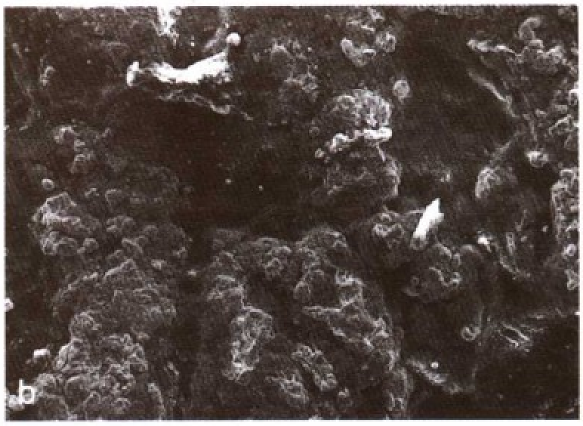




图 10-1　扫描电镜结果。a．复合材料；b．汞合金；c．显示不同表面特征的黄金
Fig 10-1 Scanning electron microscope views of (a) composite (b) amalgam and (c) gold showing different surface characteristics

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体的外形及用手机上的金刚砂车针或常规的磨光钻去除修复体边缘悬突，有利于牙齿的充分清洁并将减少牙邻接面间的菌斑水平（见 Chapple and Gilbert 2002）。用橡皮盘、橡皮尖、磨光盘抛光银汞合金修复体并不能进一步改善牙龈健康。

achieve. The contouring of restorations and removal of marginal overhangs using diamond tips within reciprocating handpieces and conventional finishing burs are sufficient to permit adequate tooth cleaning and reduce interproximal plaque levels (see Chapple and Gilbert 2002). Polishing of amalgam restorations using rubber discs, rubber tips and polishing pastes does not result in further improvement in gingival health.

复合树脂材料最初完成时具有光滑的表面纹理，但6个月后就被破坏，表面外形与未修整的修复体一样。陈旧修复体由于复合树脂材料表面粗糙度及边缘封闭性的破坏，其菌斑及牙龈指数增加。

Composites can initially be finished to a suitable smooth surface texture. However, this soon deteriorates such that after six months the surface contour equates to an unfinished restoration. Plaque and gingival indices increase on older composite restorations as surface roughness and marginal seal deteriorate.

外　形

避免出现悬突是很重要的。球根状的修复体接触区宽，不利于邻面的清洁。应遵循扁的"外形突起"的原则，以模仿天然牙的外形（图10-2）。使用成形片及楔子（图10-3）可减少修复体悬突的发生率（图10-4）。经常检查有助于邻接的清洁。复合树脂直接充填引起的悬突使得邻间隙关闭，同时也将导致菌斑指数、牙龈指数和探诊深度增加。

Contour

It is essential to avoid overcontouring. Bulbous restorations with wide contact areas render interproximal cleaning impossible. The concept of a flat "emergence profile" (Fig 10-2) mimicking the natural tooth contour should be followed. The use of matrix bands and wedges (Fig 10-3) will reduce the incidence of overhanging restorations (Fig 10-4). Always check that access is provided for interproximal cleaning aids. Overcontouring with direct composite additions to, for example,

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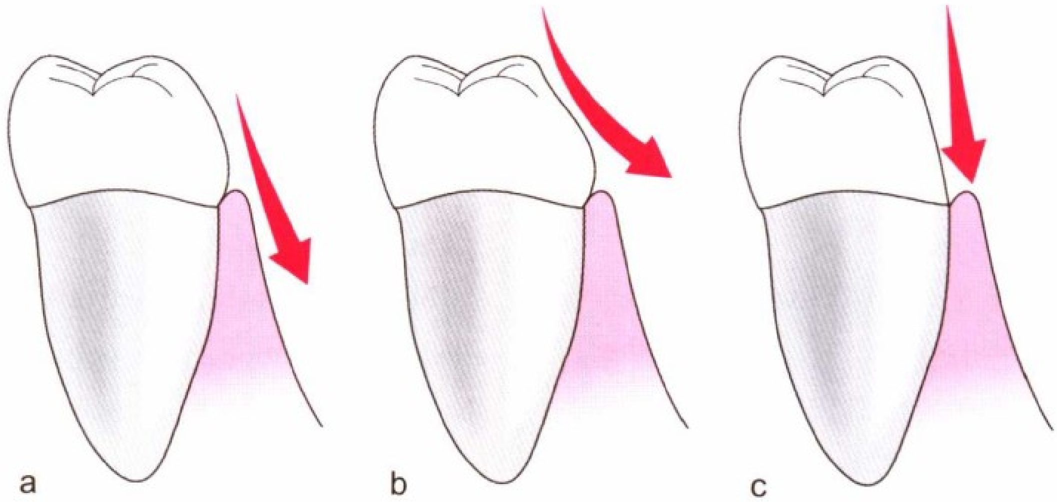


图 10-2 扁而突的外形（如 a 所示），模仿天然牙的外形，防止修复体因外形过突而导致菌斑堆积（图 b）或防止物理性损伤（图 c）

Fig 10-2 A flat emergence profile as shown in (a) mirrors natural tooth form and protects from plaque trapping that occurs in over contoured restorations (b) or physical trauma as in (c)



图 10-3 用于防止塑料修复体悬突形成的各种成形片及楔子

Fig 10-3 Various matrix bands and wedges used to prevent ledges on plastic restorations



图 10-4 12 近中边缘形成复合树脂悬突，以至于发生骨丧失

Fig 10-4 The mesial margin of 12 has been overbuilt with composite and as a result bone loss has occurred

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close spacing has been shown to increase plaque and gingival indices and probing pocket depth.

边缘封闭

由于聚合收缩，复合树脂修复体易形成边缘裂隙。可通过增加修复材料的方法来减少其发生。使用机械充填器充填可提高银汞合金修复体的边缘封闭性。

Marginal seal

Composite restorations are prone to marginal gap formation due to polymerisation shrinkage. This can be reduced by the incremental placement of restorations. Use of mechanical packers can improve marginal adaptation in restorations of dental amalgam.

只要条件许可，修复体的边缘应置于游离龈的上方。任何边缘与软组织紧连或直接接触的修复体对软组织来说都是一种潜在的刺激，将会增加局部发生牙周病的机会。修复体边缘位于龈下的患者应实施常规的口腔卫生维护计划。继发性龋也与牙周状况不佳有关（图 10-5）。

Whenever feasible, restorations should terminate above the free margin of the gingiva. Every restoration terminating in the immediate vicinity of, or in contact with, surrounding soft tissue is a potential irritant to that tissue and increases the chance of precipitating periodontal disease. Patients with subgingival restorations will require regular dental hygiene maintenance programmes. Recurrent caries is also related to poor periodontal status (Fig 10-5).

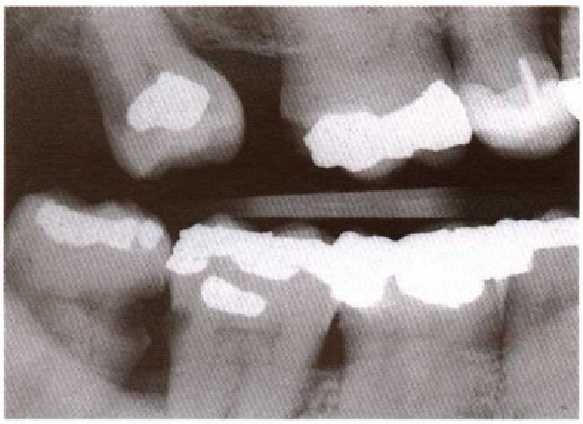


图 10-5 X线显示47，46继发龋，伴邻面（连接处）骨丧失

Fig 10-5 The radiograph shows recurrent caries 47, 46 and associated inter-proximal bone loss

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人造冠及贴面

材 料

与铸造金冠及金属瓷冠相比，丙烯酸冠滞留的菌斑较多，全瓷冠滞留的菌斑最少。

边 缘

人造冠及贴面边缘最好为龈上边缘。冠高度降低时，采用冠延长术来增加固位优于采用冠边缘置于龈下的方法（图10-6）。若冠边缘置于龈下，将导致菌斑滞留，且更易发生牙龈退缩，最终导致冠边缘暴露，影响美观效果。冠边缘位于龈下，菌斑滞留和龈炎将引起结合上皮根向移位，最终导致冠向牙周韧带纤维的破坏。

Crowns and veneers

Material

Acrylic crowns retain plaque to a greater degree than cast gold and metal ceramic crowns. Ceramic crowns show the least plaque retention.

Margins

Crown and veneer margins are best placed in a supragingival location. Where crown height is reduced, consider crown-lengthening surgery to increase retention rather than placing margins in a subgingival location (Fig 10-6). Should crown margins be placed subgingivally, plaque retention will occur with risk of further recession. Subsequent exposure of crown margins gives a poor aesthetic outcome. If crown margins are subgingival, plaque retention and gingivitis will cause apical migration of the junctional epithelium and subsequent loss of coronal periodontal ligament fibres.



图10-6 冠边缘位于龈下不利于菌斑控制，导致牙龈炎的发生

Fig 10-6 Crown margins are subgingival and inaccessible for plaque control. Gingivitis is present

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Gargiulo及其同事提出了固有"生物学宽度"的存在，即龈沟底和最冠方的牙周纤维及牙槽骨间的最小距离。他们对30例尸体的研究发现，其距离为2.04mm（结合上皮（JE）0.97mm，结缔组织1.07mm），这反映了上皮和结缔组织附着的总量（图10-7）。通常认为修复体边缘位于生物学宽度以内时，将导致牙龈炎症及结缔组织和骨的丧失。修复体边缘越接近结合上皮（JE）就越容易发生牙龈炎症。Gargiulo等描述的生物学宽度未包括龈沟，因此有两个原则用来指导临床医生决定修复体边缘的位置：

Gargiulo and colleagues proposed the existence of an innate "biological width", i.e. a minimum distance between the base of the sulcus and the most coronal periodontal fibres and alveolar bone. Based on studies of 30 cadavers, this was 2.04 mm (JE 0.97 mm, connective tissue 1.07 mm) and represents the sum of the epithelial and connective tissue attachments (Fig 10-7). It is generally accepted that restorations whose margins are placed within this biological width will lead to gingival inflammation and connective tissue and bone loss. The closer a restoration margin is to the JE the more likely gingival inflammation is. The biological width described by Gargiulo et al. did not include the gingival sulcus and therefore two further recommendations have been made to help guide the clinician

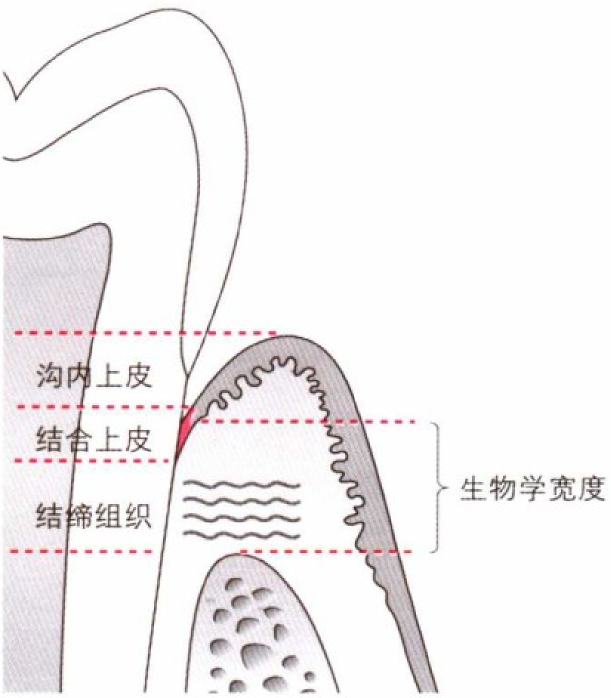


图10-7 生物学宽度的传统概念为结缔组织和上皮附着。Block认为应从龈缘开始测量，生物学距离为3mm（龈缘到牙槽嵴）

Fig 10-7 The traditional concept of the biological width is the connective tissue and epithelial attachment. Block recommends that measures be taken from the gingival margin and the biological distance be set at 3 mm (gingival margin to alveolar crest)

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- Ingber等推荐从修复体边缘到牙槽嵴的最小距离应为3mm，以适应生物学宽度。

- Nevins和Skurow建议修复体边缘不可超过龈下0.5～1mm。

Block也认为应从龈边缘而不是从龈沟底/JE开始测量，因为临床医生的视觉无法到达这个区域，故他也支持3mm的距离。当边缘超过这个距离时，就应使用冠延长术（图10-8a和b）。在去除包埋材料及成形时，铸瓷冠修复体的边缘可被破坏，将导致修复体边缘不密合最终导致粘结剂的溶解，这些将引起菌斑滞留增加、龋病发生及牙周炎的增加。

where to place the restoration margin:

- Ingber et al. recommended a minimal distance of 3 mm from the restoration margin to the alveolar crest, to accomodate the biological width.
- Nevins and Skurow advised that the restoration margin should not be further than 0.5–1 mm below the gingival margin.

Block, who also recommended that measures be made from the gingival margin rather than the base of the sulcus/JE because clinicians could not visualise this area, also supported the 3 mm distance. Where the margin encroached upon this distance, crown-lengthening surgery was indicated (Fig 10-8 a and b). The margins of cast ceramic restorations can be damaged during removal of investment materials and finishing. Resultant increased marginal discrepancies and eventual dissolution of ce-

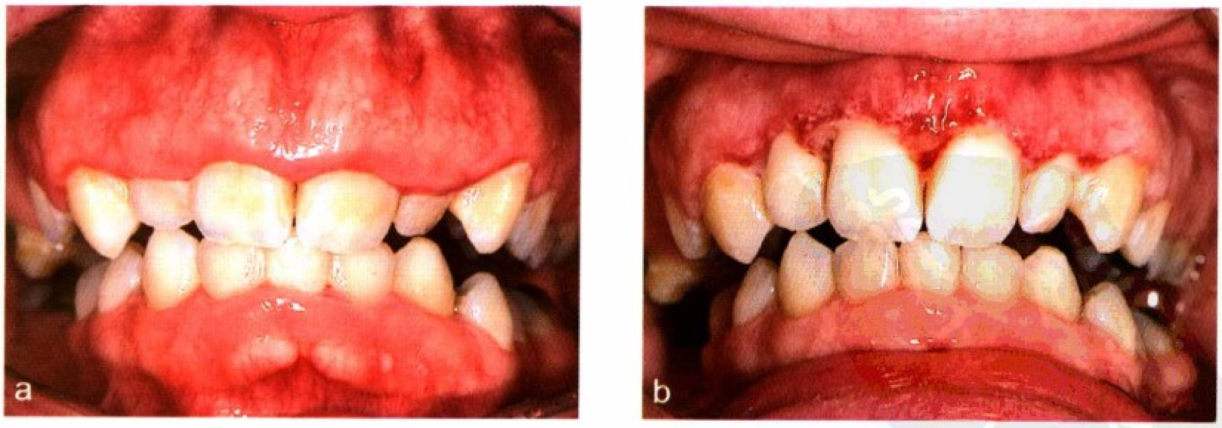


图 10-8　a. 临床牙冠过短；b. 冠延长术后一周（组织仍在愈合中）

Fig 10-8 (a) Short clinical crowns, (b) 1 week following crown lengthening surgery (tissues still healing)

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ment can lead to increased plaque retention, caries and increased periodontitis.

外　形

当计划预备冠和桥体时，常应给牙科技师预留足够的空间以制备扁而突的外形、宽的牙间隙及邻面接触点(图 10-9)。这些特征可以减少菌斑滞留并利于患者的菌斑控制。运用实验室技术可以使上述特征获得最佳效果，以保证龈边缘位于修整后的代型边缘。牙科技师可以使修复体模仿天然牙的外形，即与龈组织有平面接触点。这样做，可避免人造冠和桥体外形过突。(图 10-10)。

Contour

When planning preparations for crowns and bridges, always allow adequate space for the dental technician to produce a flat emergence profile, wide interdental spaces and point contacts interproximally (Fig 10-9). These features will reduce plaque retention and allow the patient access for plaque control. This can be best achieved by laboratory techniques that conserve the gingival margin around trimmed dyes. The dental technician can then shape restorations to mimic the contour of natural teeth, which are flat at the point of contact with gingival tissue. In doing so, the overcontouring of crowns veneers and bridges is avoided (Fig 10-10).

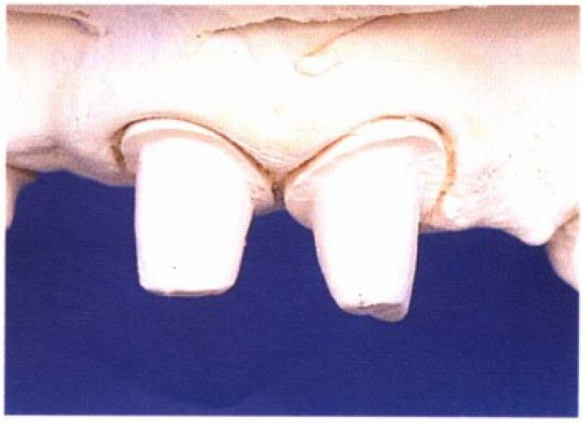


图 10-9　牙体预备应为牙科技师提供清晰的边缘并去除组织以制造理想的外形

Fig 10-9　Preparation should provide the dental technician with a clear margin and tissue removal permits ideal crown contour



图10-10　球形冠的形成将不利于菌斑的控制

Fig 10-10　A bulbous crown form that will prevent adequate plaque control

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固定桥

有证据表明，通常情况下，与其他牙相比，桥基牙的牙周状况明显较差，这是由于菌斑的滞留增加所致。已有牙周炎的患牙不是基牙的理想选择。

如果制作的冠或桥体不具备理想的外形特征（图 10-11），那么，将导致菌斑滞留增加及牙周组织的破坏。

理想的冠或桥体特征包括：

1．龈上冠边缘，边缘密合。

2．开放的牙间隙。

3．桥体和组织间为点或线状接触。

4．理想的𬌗力传递。

Bridges

There is evidence that conventional bridge retainers have a significantly poor periodontal status in relation to other teeth, and that this is directly attributed to increased plaque retention. Teeth which are already compromised periodontally are not ideal as abutments for bridges.

If ideal features for crown and bridge contours are not achieved (Fig 10-11), there will be increased plaque retention with areas of potential periodontal breakdown. The ideal features include:

1. supragingival crown margins with precise marginal adaptation

2. open interdental spaces

3. point or line-shaped contact between pontic and tissue

4. ideal occlusal loading.

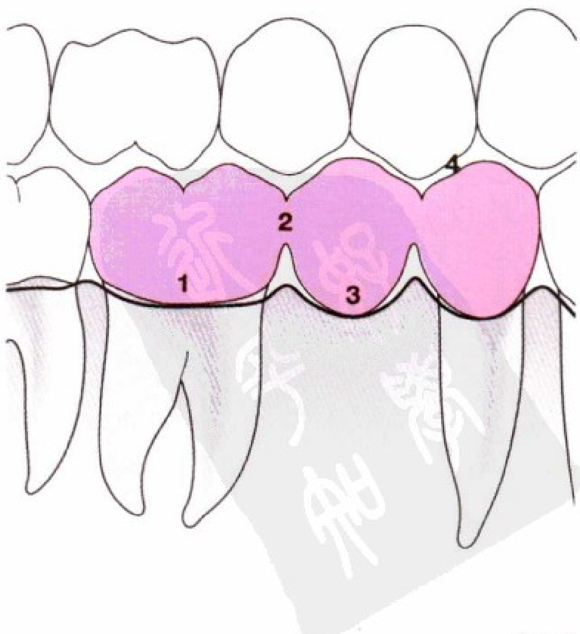


图 10-11　要避免固定桥引起的牙周问题，设计应遵循以下原则：1．良好的龈上边缘；2. 开放的牙间隙；3. 冠外形；4. 桥体与组织相接触。𬌗不协调将使牙周袋深度加深

Fig 10-11　Potential periodontal problem sites with fixed bridges (1) supragingival marginal adaptation, (2) open interdental spaces, (3) crown contour, (4) contact of pontic with tissue. Occlusal disharmony may exacerbate existing pocketing

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桥体的外形将明显影响菌斑的控制。图10-12显示了桥体的四种设计方法。悬空式设计（卫生桥），最易清洁，但美观最差。而经过抛光的盖嵴式设计，使用特制牙线可使菌斑不易附着。

The profile of bridge pontics can significantly affect access for plaque control. Four pontic designs are shownin Fig 10-12. The "wash-through" design, whilst being most easily cleansable, offers poor aesthetics. The "ridge lap" design, if well polished, can be maintained plaque free with the use of superfloss.

粘附形预备量最小的桥

这种类型的修复体可用于替换单个牙位。牙周炎患者使用这种修复体可推迟使用局部义齿的时间。如果可以使用这种修复体，即使只是5～10年，都将对患者有益，因为这可以延缓菌斑堆积于局部义齿周围而引起的牙周炎的进展。有证据表明粘附桥会增加菌斑滞留。

Adhesive minimum preparation bridges

These types of restoration can be useful in the replacement of single units. In patients with periodontal disease their use can delay the need to provide a partial denture. If this can be achieved for even 5–10 years, the patient will benefit because increased risk of periodontal progression subsequent to plaque collection around partial dentures will be delayed. There is evidence that ad-

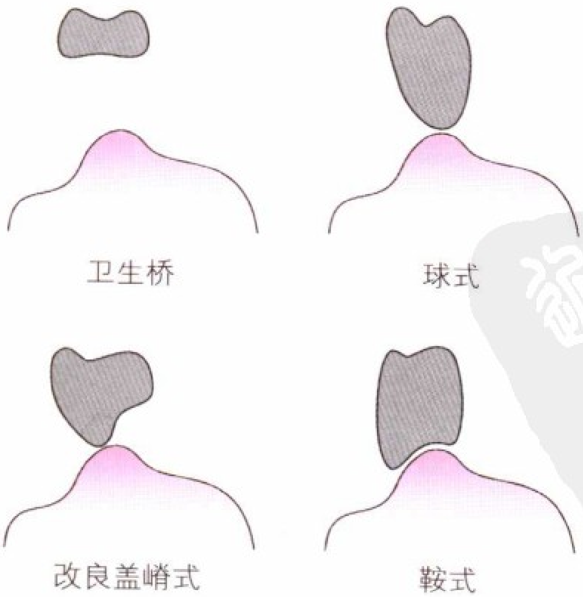


图 10-12 图表显示各种桥体设计

Fig 10-12 Diagram showing various bridge pontic designs

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hesive bridges do contribute to plaque retention.

经统计，与未修复的牙相比，桥基牙的菌斑附着较多，龈炎、龈退缩发生较重，结缔组织附着水平较差。然而，由于它是作为修复体的基牙发挥其临床作用，其牙周情况与其他类型的修复体的牙周情况相比并没有差别。任何适用于冠修复的特征都可用于桥的设计（图10-13a～d）。预备全瓷固定桥时应注意连接体必须较宽，以获得足够的强度。设计修复体时，有必要检查是否有足够空间使用邻面清洁装置。

Bridge abutments show statistically poorer plaque, gingivitis, recession and connective tissue attachment levels than unrestored teeth. These changes are, however, of a magnitude such that the bridges function clinically, and periodontal effects are no worse than with other forms of dental restoration. All features relating to crown construction apply to bridge design (Fig 10-13 a to d). Care is required in planning all-ceramic bridges, as connectors must be wider to permit adequate strength. It is essential to check that access is allowed for use of interproximal aids during the design of the restoration.

种植体修复

即使获得成功的骨整合，种植体也可能由于负载过度或感染而远期效果不佳（图10-14a～d）。专业上称为种植体周围炎。菌斑滞留可导致种植体周围炎的发生。当前使用的种植体的许多设计特点都表现出有利于菌斑滞留的特点。菌斑沉积常见于以下情况：

- 沿着种植体与黏膜基台间界面。
- 黏膜基台与修复体间界面。
- 种植体与修复体间界面。

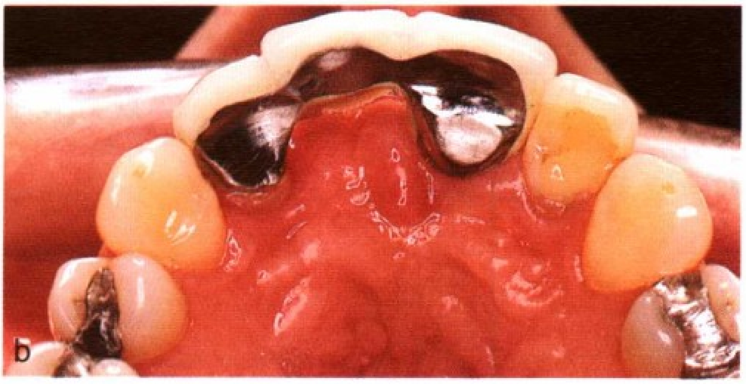
Implant Reconstruction

Once successful osseointegration has been achieved, implants may fail in the long term (Fig 10-14 a to d) due to overload or bacterial infection. This has been termed *peri-implantitis*. Plaque retention predisposes to peri-implantitis. Several design features of currently used implants present plaque-retentive properties. Plaque accumulation occurs:

- along the implant-transmucosal abutment interface
- at transmucosal abutment-prosthesis interfaces
- at implant-prosthesis interfaces

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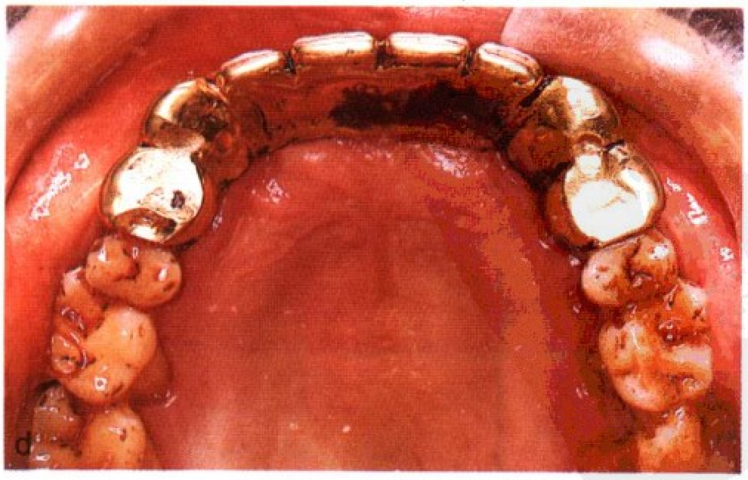
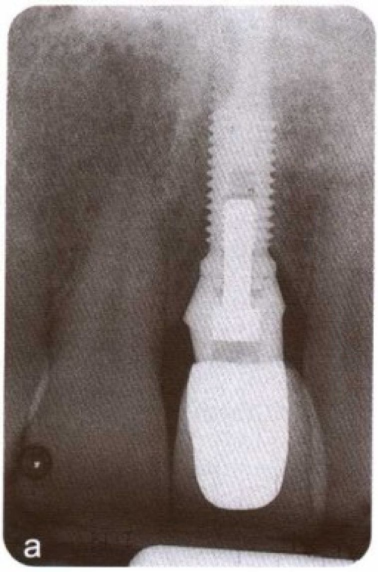


图 10-13 a，b. 设计良好的桥体利于菌斑控制；c，d. 设计不良的桥体利于菌斑滞留

Fig 10-13 (a, b) A well-designed bridge has access for plaque control, (c, d) A poorly fabricated bridge predisposes to plaque retention

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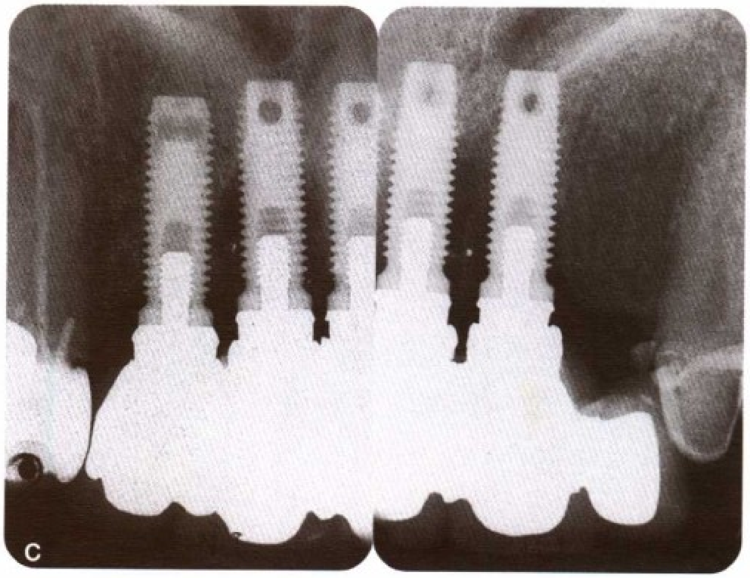
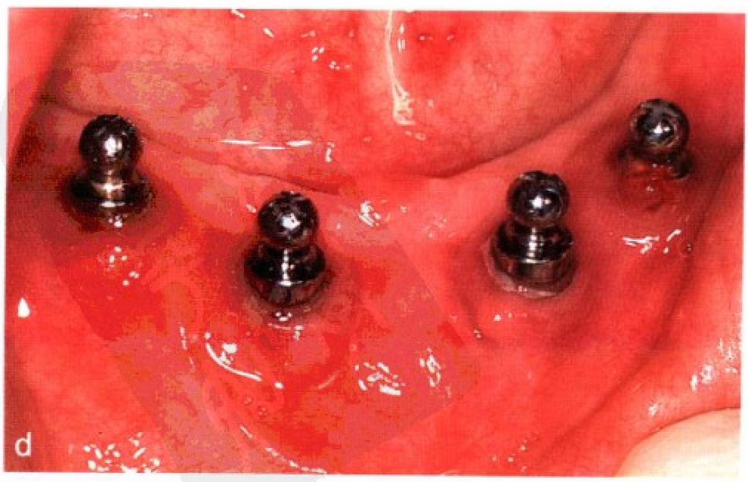


图 10-14　成功种植体（a，b）的X线和临床表现；失败的上颌种植体（c）的X线表现；失败的下颌种植体（d）的临床表现

Fig 10-14　(a, b) Radiograph and clinical slide of successful implant. (c) Radiograph of failing implants in maxilla. (d) Clinical slide of failing mandibular implants



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- 种植体、基台、修复体表面。

其他促进菌斑沉积的因素有：

- 种植体各组分间微间隙的大小。
- 修复体和基台表面的粗糙度。
- 种植体螺纹表面的暴露。
- 种植修复体外形过突。

对骨整合种植体进行牙周探诊时应小心。有可能引入外源性细菌或因金属探针刮伤种植体表面而增加菌斑的滞留。在评价种植体周围状况时，种植体周的牙周袋深度并不能认为是一个有价值的诊断标准。因为螺旋型种植体的螺纹暴露时将使探诊变得困难。骨整合种植体的患者应注意维护，可按以下方案进行：

- 保持牙周健康。
- 保持骨整合。
- 防止软硬组织病变的发生或进一步发展。
- 诊断生理性失败。
- 诊断技术性失败。
- 有病变迹象时给予积极治疗。

进行种植体周维护时可能会损伤

- on the surfaces of the implant, abutment and prosthesis.

Other factors contributing to plaque accumulation are:

- size of the micro gap between the implant components
- the degree of surface roughness of restorations and abutments
- the exposure of plasma-sprayed coatings and threaded surfaces of implants
- overcontouring of implant restorations.

Care should be exercised in the use of periodontal probes around osseointegrated implants. It is possible to introduce exogenous bacteria and metal probes can scratch the implant surface thus contributing to increased plaque retention. The pocket depth surrounding an implant is not considered a valuable diagnostic criterion for the evaluation of the peri-implant condition. Probing may be difficult if the threads of screw-type implants are exposed. Patients with osseointegrated implants require a supportive care regime designed to:

- maintain periodontal health
- maintain osseointegration
- prevent the initiation or progression of soft and hard tissue lesions
- diagnose biological failures
- diagnose technical failures
- provide active therapy if indicated.

There is the potential for damage to im-

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种植体表面。超声波、（音）声波、气动、手工不锈钢器械、钨碳器械可损坏种植体表面，造成粗糙的利于菌斑滞留的表面。进行维护计划时应使用塑料或黄金头的器械（图 10-15a 和 b）。

plant surfaces when undertaking peri-implant maintenance. Ultrasonic, sonic, airbrasive, hand held stainless steel and tungsten carbide instruments can damage implants leaving roughened plaque-retentive surfaces. Implants with hydroxyapatite coatings are most susceptible to damage. Plastic- or gold-tipped instruments should be used as part of the maintenance regime (Fig 10-15 a and b).

可摘修复体

与可摘局部义齿相关的牙周组织破坏可由以下问题引起：菌斑滞留的增加，口腔卫生出现问题，边缘龈被义齿的组分所覆盖并通过修复体传导𬌗力。

Removable Prostheses

The breakdown of periodontal tissues in relation to removable partial dentures can be attributed to increased plaque retention and oral hygiene problems; coverage of marginal gingiva by denture components and transmission of occlusal forces by the prosthesis.

与义齿设计相比，患者能否遵从口腔卫生指导与预测牙周炎基牙长期

Patient compliance with oral hygiene is of greater relevance than denture design in

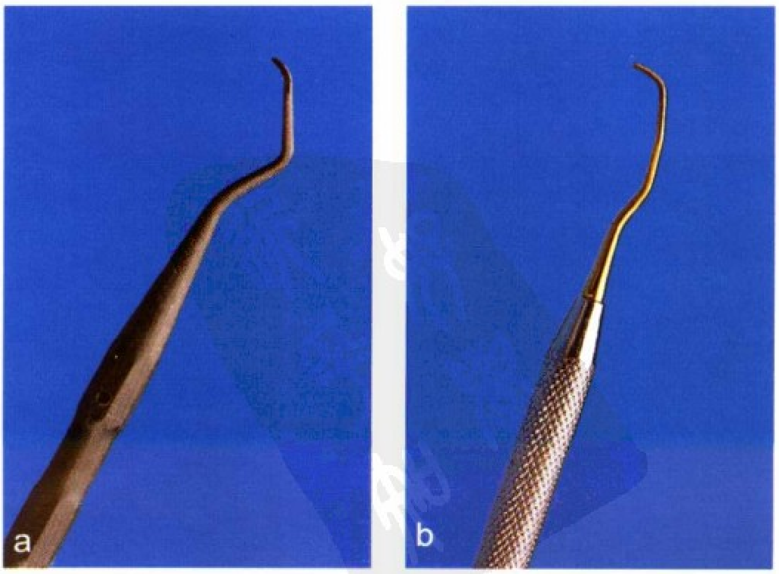


图 10-15　用于骨整合种植体的塑料（a）和黄金末端（b）的刮治器械

Fig 10-15　Examples of (a) plastic- and (b) gold-tipped scaling instruments for use on osseointegrated implants

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预后的关系更密切。去除丙烯酸义齿的牙石后，将使义齿变得粗糙且不规则，故应对义齿进行抛光以防止菌斑滞留。当清洁丙烯酸义齿时，用超声洁治头的侧缘来回旋转移动可产生微小的磨耗。

predicting the long-term prognosis for abutment teeth affected by periodontitis. Following the removal of calculus from an acrylic denture, roughness and irregularity arise. The denture should therefore be repolished to prevent increased plaque retention. When cleaning acrylic dentures the least abrasion occurs using the lateral edge of an ultrasonic sealer tip followed by rotating silicone points in a straight hand piece.

设计良好的局部义齿（图10-16）由天然牙列的余留牙提供支持，通过进入倒凹的卡环和远离龈边缘的连接体提供强大的固位作用。设计良好的钴铬支架支持的局部义齿有平衡的牙列和组织支持，是理想的长期局部修复体。当余留牙预后不明确或余留牙周支持力差，无法提供牙列支持时，可考虑使用丙烯酸黏膜支持的局部义齿（图10-17）。在对后者进行设计时，应注意避免牙龈不必要的菌斑滞留或对牙龈边缘的物理性损伤。全丙烯酸义齿的优点在于其设计允许添加将来因

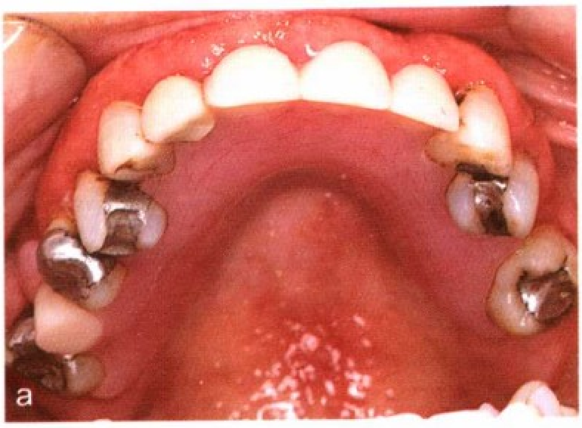
A well-designed partial denture (Fig 10-16) has support provided by rest seats on natural teeth, positive retention provided by clasps engaging undercuts and connectors which are clear of gingival margins. A well-fitting cobalt-chromium-based denture with balanced tooth and tissue support is the ideal long-term partial prosthesis. Where remaining teeth are of doubtful prognosis or have such poor-quality residual periodontal support, such that they cannot be used to provide denture support, an acrylic mucosal supported partial den-



图10-16 设计良好的钴铬支架支持的局部义齿

Fig 10-16 Well-designed cobalt chromium skeletally supported partial denture

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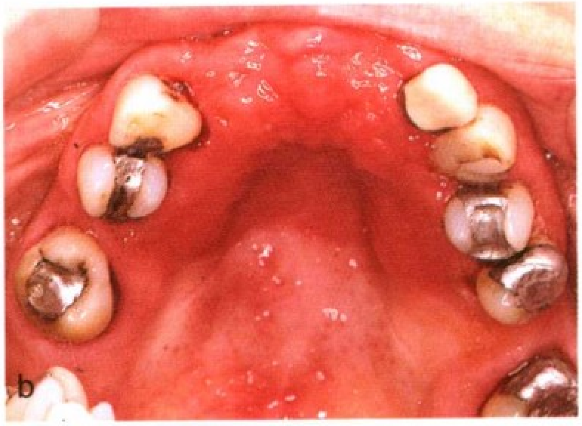


图 10-17 a. 缺少粘膜支持的丙烯酸义齿；b.义齿性口炎和局部义齿下的不良牙周情况
Fig 10-17 (a) An acrylic denture lacking occlusal support, (b) Denture stomatitis and poor periodontal status beneath partial denture

牙周炎而缺失的牙齿。

ture may be considered (Fig 10-17 a and b). In designing the latter, every effort must be made to relieve the gingival margins to avoid unnecessary plaque retention or physical trauma to the gingival margins. The advantage of all-acrylic dentures is that the design allows for the addition of further teeth should they succumb to periodontal disease in the future.

牙周－牙髓联合病变

牙周组织及牙髓－牙本质复合体形成了密切的生物连续统一体，通过这个统一体，二者中任何一个组织的病理变化都可以引起另一组织的感染。我们应致力于评价牙髓与牙周组织或其中一种组织的生存能力，而不是试图探求感染的来源。只有当医生作出准确的诊断并按计划进行治疗时才能使治疗获得成功。旁路交通如根尖孔、侧支根管、牙本质小管、根折、先天性

Periodontal-endodontic Lesions

The periodontal tissues and the pulp-dentine complex form an intimate biological continuum through which pathological changes in either tissue may result in infection of the other. Rather than attempt to establish the primary origin of such infection, management should follow careful assessment of the viability of either or both the pulpal and periodontal tissues. Success with therapy will only be achieved

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沟裂、根吸收、医源性穿孔为牙髓和牙周组织提供了紧密联系。牙髓治疗在有些情况下可引起牙周组织的损害，这些包括根管侧穿、条状穿孔、打桩时穿孔和根折。

if the practitioner establishes an accurate diagnosis and follows a methodical approach to treatment planning.

The pathways of communication such as apical foramina, lateral canals, dentine tubules, root fractures, congenital grooves, root resorption and iatro-genic perforation provide a close relationship between the pulp and the peri-odontium. There are circumstances when endodontic treatment may cause damage to periodontal tissues. These include root canal perforation, strip perforation, post perforation and root fracture.

总之，牙髓感染可能引起牙根尖或非根尖区牙槽骨的炎症变化。当牙髓引起的根尖病变与牙周病变有交通时，牙周－牙髓联合病变发生率增高（图10-18）。这些病变可伴牙髓或牙周症状。

In general, pulpal infection has the potential to initiate inflammatory changes in the alveolus at both apical and non-apical regions of the teeth. Periodontal-endodontic lesions arise when an endodontically induced periapical lesion exists on a tooth which also has a communicating periodon-

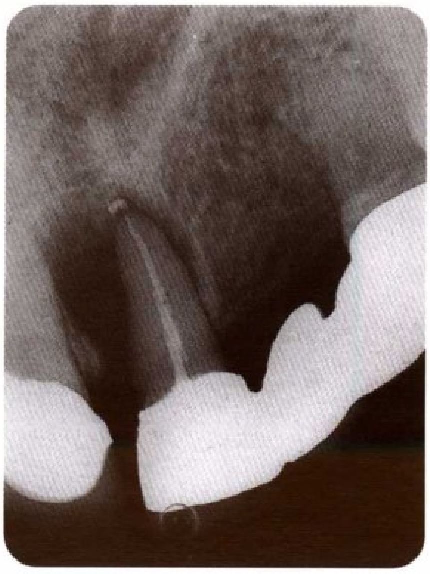


图 10-18 牙周－牙髓联合病变

Fig 10-18 A combined periodontal endodontic lesion

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tal lesion (Fig 10-18). These lesions may present with either pulpal or periodontal symptoms.

理论上，牙周疾病可引起牙髓的感染，然而，除非牙周病变波及根尖孔，否则这种情况很少发生。感染从牙周组织向牙髓扩散的途径包括侧支根管、牙本质小管和外吸收区的吸收腔隙。

In theory, periodontal disease may lead to infection of the pulp. However, this is rare unless the periodontal lesion extends to the apical foramen. The channels for potential spread of infection from the periodontium to the pulp include lateral root canals, dentine tubules, furcation canals and resorption lacunae in areas of external resorption.

诊断方法包括：牙周袋探诊、牙髓活力测定、平行技术投照的根尖周X线，用或不使用牙胶尖放置于窦道来协助确定感染来源。

A diagnosis is obtained by periodontal pocket probing, pulp vitality testing and use of periapical radiographs utilising a paralleling technique, with or without a gutta percha point placed down the sinus tract to help locate the source of infection.

图 10-19 中显示了牙周－牙髓联合病变的处理方法。在进行后续牙周治疗前应先解决牙髓来源的感染。

The flow diagram in Fig 10-19 outlines the management of periodontal-endodontic lesions. Essentially the endodontic focus of infection must be successfully managed if such lesions are to resolve with subsequent periodontal therapies.

根分叉病变的治疗

牙周炎患者若存在根分叉病变患牙将影响治疗计划。根据牙周袋探诊和X线显示的牙周破坏程度，可对根分叉病变进行分类（图 10-20）。根分叉病变可分为：

Management of Furcation Lesions

The presence of furcation-involved teeth in a periodontal patient will influence the treatment plan. The classification of furcation defects (Fig 10-20) is based upon the degree of periodontal destruction as assessed by pocket probing and radiographs. Furcation lesions can be classified as:

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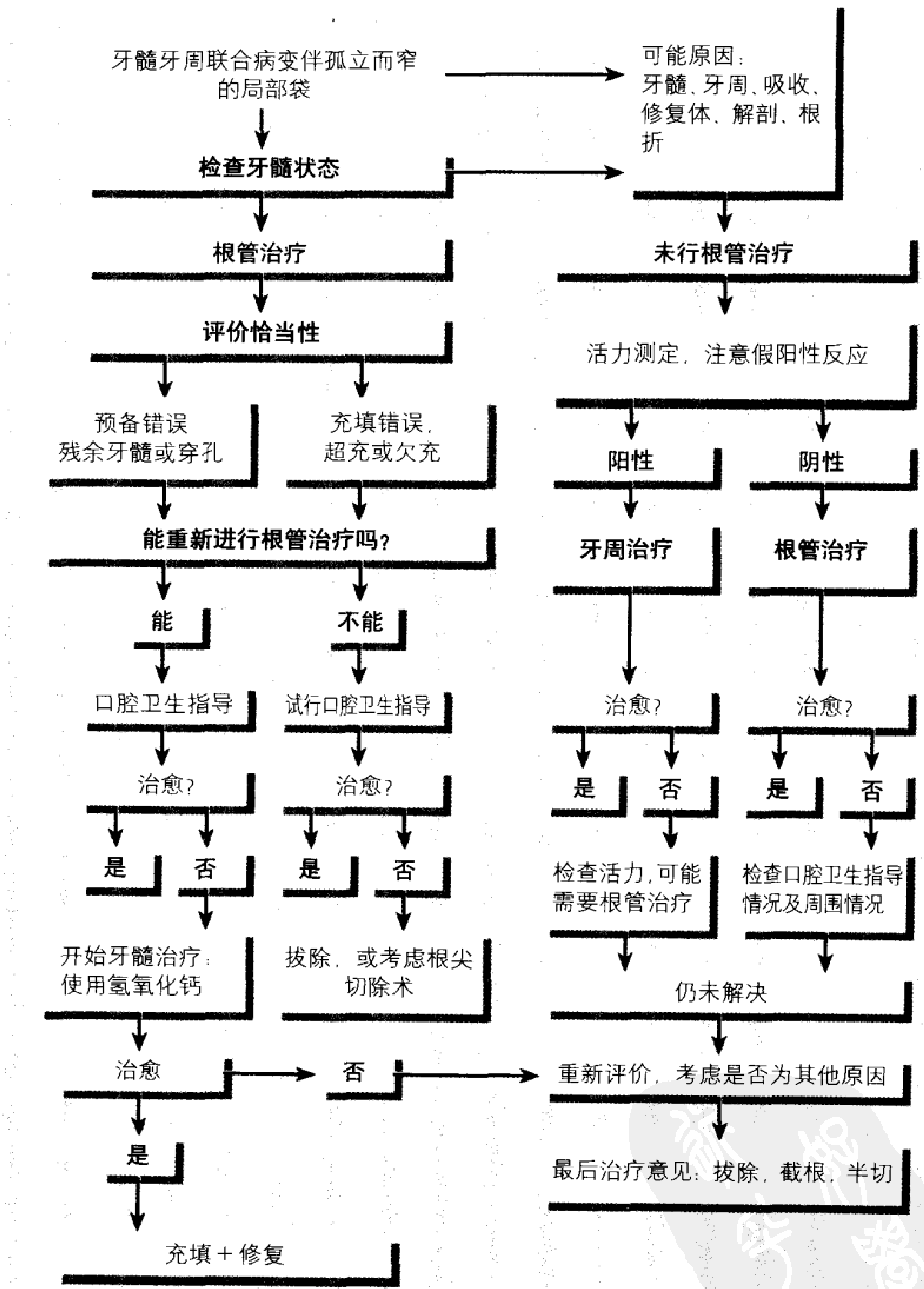


图 10-19 牙周－牙髓联合病变的处理方法

Fig 10-19 Management of combined periodontal-endodontic lesions

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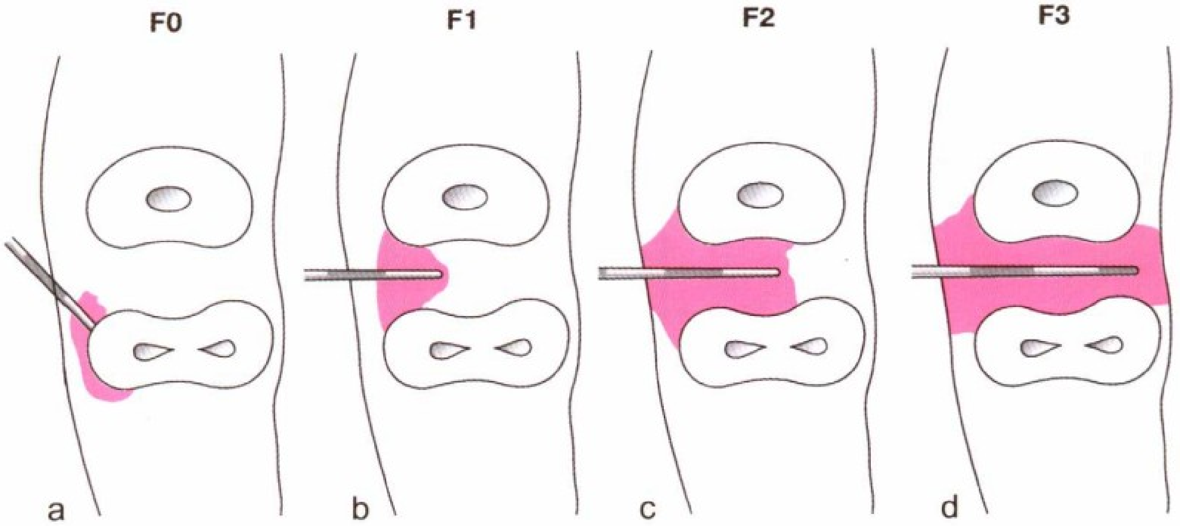


图 10-20 根分叉病变的分类
Fig 10-20 Classification of furcation defect

Ⅰ度：牙周支持组织水平方向的破坏但未超过牙齿宽度的1/3。

Ⅱ度：牙周支持组织水平方向的破坏超过牙齿宽度的1/3，但未超过根分叉区的总宽度。

Ⅲ度：根分叉区组织水平方向穿通性破坏。

按根分叉病变程度划分的治疗方法总结于表 10-1。治疗开始时先采用简单的治疗方法是很重要的。

根分叉病变的存在将影响所涉及牙的长期预后。虽然简单的机械治疗很少可以解决根分叉病变问题，但它可导致牙龈退缩，有利于患者维护根分叉区。

Degree I — horizontal loss of periodontal support not exceeding one-third of the width of the tooth.

Degree II — horizontal loss of periodontal support exceeding one-third of the width of the tooth, but not exceeding the total width of the furcation area.

Degree III — horizontal "through and through" destruction of the tissues in the furcation area.

Treatment options dependent upon the degree of furcation involvement are summarised in Table 10-1. It is essential to attempt simple therapy in the first instance.

The presence of a furcation defect adversely affects the long-term prognosis for involved teeth. Whilst simple mechanical therapy rarely results in resolution of furcation defects, it may induce recession and that may be sufficient to enable the patient

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表 10-1 按根分叉病变程度划分的治疗方法

Table 10-1 Treatment options dependent upon degree of furcation involvement

根分叉程度	治疗方法选择
I	*口腔卫生指导 刮治及根面平整术 根分叉成形术
II	*口腔卫生指导 刮治和根面平整术 根分叉成形术 隧道成形术 截根术 拔牙 引导组织再生治疗术
III	*口腔卫生指导 刮治和根面平整术 隧道成形术 截根术 拔牙

*多从保守治疗开始，保守治疗失败后开始其他治疗

根分叉成形术是一种外科手术，包括去除根分叉入口的根面牙本质，扩大根分叉区以利于保持口腔卫生。它可引起牙龈退缩，同时也利于菌斑的控制。

截根术可于根管治疗术后进行(图10-21)。上颌可考虑去除磨牙远中颊根，下颌磨牙远中根常有环形十字截面，故为最值得保留的部分。下颌磨牙的牙根分根后，可分别保留作为独

to maintain the area.

Furcation plasty is a surgical technique that involves removal of root dentine at the entrance to the furcation, to open up the furcation and facilitate oral hygiene. Recession is induced and easier access for plaque control achieved.

Root resection can be performed after root canal therapy (Fig 10-21). In the maxilla, removal of the distobuccal root of molars can be considered. In the mandible, the distal root of molars normally has a cir-

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立的“前磨牙”。

采用两种技术可获得牙周组织(如骨、牙周韧带和牙骨质)的再生。引导组织再生治疗术（GTR）（图 10-22）使用屏障膜将上皮组织和牙龈结缔组织从手术区分开。这种方法有助于形成新的牙周附着装置的间充质多能干细胞在牙根表面克隆。另一种替代的方法是将釉基质蛋白置于根面，先有牙骨质的形成而后有牙周韧带和牙槽骨的形成(图10-23a和b)。生物陶瓷材料也可单独利用或与上述两种材料的任一种同时使用。

cular cross-section and is the most desirable unit to retain. Alternatively, the mandibular molar roots can be sectioned and both retained as separate “premolar” units.

Regeneration of periodontal tissues, i.e. bone, periodontal ligament and cementum can be achieved using two techniques. Guided tissue regeneration (GTR) (Fig 10-22) excludes epithelial tissue and gingival connective tissue from the healing surgical site by the use of a barrier membrane. This facilitates colonisation of the root surface with mesenchymal pluripotent stem cells capable of forming a new periodontal attachment apparatus. An alternative method relies upon the placement of enamel matrix protein on the root surface, initiating cementum formation and sequentially periodontal ligament and supporting alveolar bone (Fig 10-23 a and b). Bioceramic materials may also be used alone or with either of the two materials.

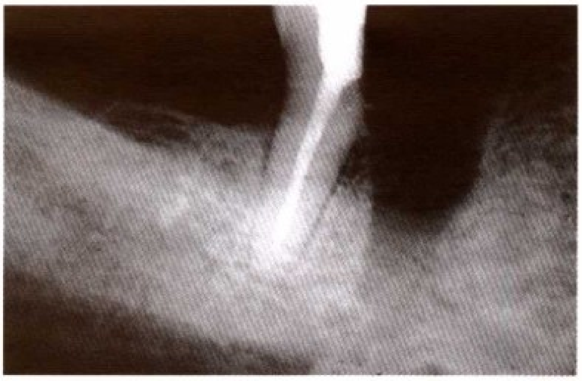


图 10-21　半切术的牙

Fig 10-21　A hemi-sected tooth



图 10-22　置于手术区的 GTR 膜

Fig 10-22　A GTR membrane at surgical placement

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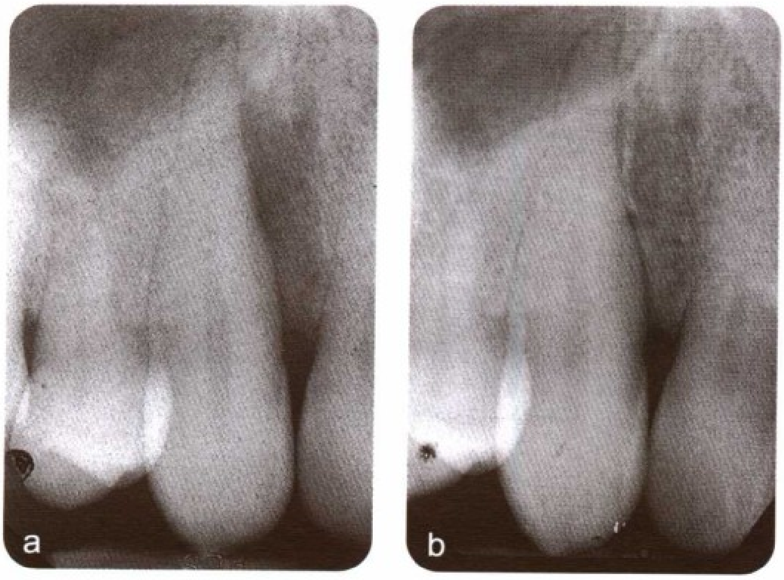


图 10-23 a. X线显示13近中深袋和进展性骨丧失；b. 釉基质蛋白治疗后6个月

Fig 10-23 (a) Radiograph showing 13 with deep mesial pocket and advanced bone loss, (b) Six months after treatment with enamel matrix protein derivate

隧道成形术为进入根分叉区提供了入口。隧道成形术产生了完全穿通的缺损使患者可以充分利用牙间隙刷。根分叉区副根管的高发生率可导致牙髓活力的丧失，可采用常规根管治疗法进行治疗。根面龋是隧道成形术的远期并发症。

Tunnel preparation provides access to the furcation area. A tunnel preparation produces a through and through defect which the patient can access using interdental brushes. The high incidence of accessory root canals in the furcation site may result in loss of pulp vitality, which can be managed by conventional root canal therapy. Root caries is a long-term complication of this form of treatment.

长期保留未处理的根分叉病变，可能导致邻接区的破坏。此外，还可使口内其他原有的牙周袋再次感染。因此必须拔除预后不良的牙，使牙列能发挥长期的功能。实际上，选择拔牙的患者，常将仅保留前磨牙、尖牙、切牙的短牙列作为治疗的选择。

Long-term retention of teeth with unmanageable furcation defects may compromise access to adjacent sites. In addition, re-infection of other residual pockets in the mouth may occur. Teeth with poor prognosis should therefore be extracted to preserve teeth with potential for long-term function. Indeed, in selected patients, a shortened dental arch, retaining only pre-molar, canine and incisor teeth may often be the treatment of choice.

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临床相关要点

- 不要让你的修复体虚有其名，如在决定进行手术治疗和修复治疗前应确保牙周组织的健康 。
- 抛光及修复体成形时应遵循厂家的指导。
- 设计的冠和桥应有宽的牙间间隙和扁而突的外形。
- 牙科技师只有在良好设计的基础上才能制作出理想的修复体。
- 当置入复杂的修复体时应常给患者提供关于使用邻接清洁工具的专业的口腔卫生指导。
- 设计部分义齿时应注意支持力及任何可能的利于龈边缘清洁的措施。
- 需进行复杂的修复重建的患者的治疗计划中应包括支持维护。

Key Points of Clinical Relevance

- Do not let your restorations be a "gilded sepulchre in the cemetery of decay", i.e. ensure a sound periodontal status prior to embarking upon operative procedures and prosthodontic treatment.
- Follow the manufacturer's directions for polishing and finishing of restorations.
- Design crowns and bridges with wide interdental spaces and flat emergence profiles.
- The dental technician can only produce ideal restorations on a well-designed preparation.
- Always give the patient specific oral hygiene advice regarding the use of interproximal cleaning aids when complex restorations are placed.
- Take care in the design of partial dentures to include support and wherever possible keep clear of the gingival margins.
- Include a supportive care regime in the treatment plan for patients with complex restorative reconstructions.

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拓展阅读
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